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JOURNAL
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The Accelerated Program of Medical Education*

VICTOR JOHNSON, Chicago, *Chairman*
F. H. SWETT, Duke
and
JAMES GREEN, Iowa
Committee on Study of Accelerated Program

When it became apparent that the needs of war dictated the adoption of an accelerated program of medical education, the executive Council of the Association of American Medical Colleges appointed the authors to constitute a "Committee on the Accelerated Program," to study and make recommendations on the immediate problems involved in this plan, and also to attempt to ascertain those features of the program which might be of lasting value in postwar medical education. This report, based on statements from 67 medical schools in the United States, is only a preliminary report, since acceleration has barely begun.

Of the many problems demanding solution under the accelerated program, the following three are of paramount immediate importance: (1) the maintenance of an adequate teaching staff; (2) the assurance of a sufficient number of qualified applicants for medical schools; and (3) the financing of needy medical students. Other problems of acceleration seem to have been met with fair success.

MAINTENANCE OF TEACHING STAFF

The extent to which our teaching staffs have been reduced in numbers, by departure of men for the armed forces, is shown in Figure 1.

At least 42 schools (of the 55 giving figures) have lost 20 per cent or more of their clinical instructors. Although the fraction is smaller in the preclinical years (only 15 schools of the 53 reporting figures having experienced a reduction of 15 per cent or more), the handicap is still serious, since practically all preclinical teachers are full time, while clinical teachers, and especially those who have left, are probably mainly part time.

It is recognized that men contributing to the high percentages in some schools may include many teaching only an hour or two a week whose loss may be far less serious than the loss of fewer full time men by schools showing a lower percentage. Despite these limitations, the chart gives some idea of the extent and variability of the depletion of staff.

*Report of the Committee on the Accelerated Program of the Association of American Medical Colleges made at the Fifty-third Annual Meeting of the Association of American Medical Colleges, held in Louisville, Kentucky, October 26-28, 1942.

Dr. Harold Diehl (in his Louisville report) has shown that so far our schools have contributed as large a percentage of physicians to the armed forces as have physicians in the country at large. His figures also show the following about physicians under 45 years of age. If the medical schools contribute the remainder of the men now listed as "available," and if physicians at large contribute an equal proportion of men, 63,000 physicians will be in active service. These could care for 9,000,000 men under arms. It follows that not until the armed forces have reached 9 million men will it be necessary to call all the physicians now designated as "available" by medical schools, and not until then will it be necessary to revise our essential lists drastically, except, perhaps, in the cases of those few schools which have obviously listed too many men as essential and are now definitely contributing less than their quota of physicians to the armed forces.

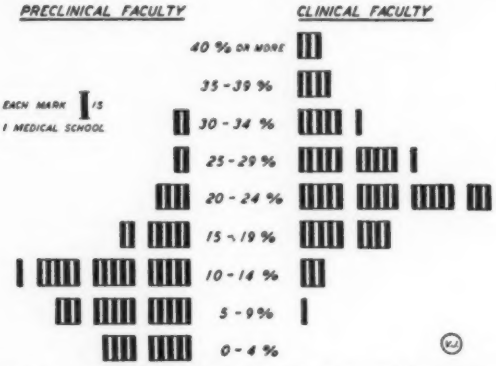

FIGURE 1.—PERCENT OF FACULTIES IN MILITARY SERVICE

Despite a marked reduction in the teaching staff, medical schools have managed to carry on fairly satisfactorily[1†], mainly through the willing assumption of added duties by those remaining. However, at least ten schools already find their losses becoming serious, and in most schools there is the fear or even the certainty that further losses will be *very* serious, and will appreciably reduce the quality of instruction. The clear impression is gained from a study of the reports that actual or anticipated loss of faculty is a far greater threat to the quality of instruction than is anything inherent in the accelerated program itself.

The loss of faculty members who are now engaged in full time nonmilitary war work (O.S.R.D. research, etc.) and therefore not available for teaching, is apparently much less important, except at only a few schools. In 35 schools no one is engaged in such full time work and in only 9 schools are there more than 10 faculty members in this category.[2] The part time workers in war research reduce the supply of available teachers still further, but, on the whole, it seems clear that this factor is much less important in reducing teaching manpower than is the departure of faculty members to military service.

†Footnote numbers in text refer to numbered items in the appendix, where more detailed figures are cited.

THE SUPPLY OF PREMEDICAL APPLICANTS

Almost all deans are satisfied, and many are agreeably surprised at the prospects for the next incoming class. Only five of the reporting schools anticipated difficulty in obtaining a 1943 class meeting their usual standards.[3] Comments that applicants were "superior," excellent," "plentiful," "of higher quality," "better than usual," "more serious minded," were not anticipated.

On the other hand, much doubt was expressed about obtaining an excellent 1944 class. Undoubtedly the number of superior applicants for the 1943 class was increased by students with only three years of premedical work, who, in normal times, would have continued to the bachelor's degree and become applicants for the 1944 class. The limits to which this reservoir can be tapped will probably be reached with the 1944 class, if they have not already been reached. An adequate supply of candidates for the 1944 class will depend in large measure on the extent to which premedical students generally, in the many colleges supplying us with men, have been accelerating. It seems likely that this factor need be of less concern to us now than the induction of 18 and 19 year old men.

Unless adequate provision is made for the deferment of promising premedical students—and it must be made—the loss of students will be far more serious than any anticipated loss of staff. A deferment plan for premedical students will be more difficult to devise and administer than was the plan for medical students. However, we may well be optimistic on the outcome, because of our experience with the wise past policies of Selective Service, the Army and the Navy, plus the excellent work of Dr. Rappleye and his Committee on War Activities, to whom every school and everyone interested in medical education and winning the war is deeply indebted.

FINANCING OF MEDICAL STUDENTS

The financing of needy students, who are now required to increase their annual expenditures and at the same time are deprived of the opportunity to earn money during the summer, has been recognized by all of us as of paramount importance in the accelerated program. Practically all students have been able, financially at least, to commence the accelerated program.[4] There is no question but that this was made possible largely through the generous grants of the W. K. Kellogg Foundation. Whether almost all students will be able to continue on the accelerated program remains to be seen.

Sixty schools estimate that extra loan and scholarship funds, totalling about $1,250,000, are required for the first academic session (three-fourths of the calendar year) of the accelerated program, including the summer of 1942. If the figures for these schools are representative, we may estimate that all of the accelerating schools require about $1,500,000. Adding one-third to this sum, to cover the *calendar* year instead of the academic year, equals an annual extra requirement of at least $2,000,000 to maintain students on the accelerated program. The sum available to medical students in loans from the federal government this year is not known with certainty, but since the Congressional appropriation of $5,000,000 provides for students in engineering, physics, chemistry,

dentistry, pharmacy and medicine, the sum available for medical students probably does not exceed $1,500,000. Whether this will prove adequate for the current year is questionable, and should be determined in sufficient time for this Association to make strong representations to justify an increase in the allottment for medical students in next year's Federal Budget, if necessary. Furthermore, the federal appropriation should include provision for freshmen and beginning sophomores as well as those who will complete their work in two years. These students have no greater resources than seniors, are accelerating equally rapidly as a wartime measure, and are as good loan risks.

It is much more difficult to estimate the extra costs of acceleration to the schools themselves. Perhaps, in fully one-half the cases, increased tuition income will approximately cover added costs, but 33 schools state that some budgetary increases, derived from legislative appropriations or endowment and gift income, are necessary to finance the program.

MEDICAL SCHOOL SCHEDULES

Although the conditions imposed by the accelerated program can be met satisfactorily under the semester, trimester, or quarter plan, it is clear that most schools think the quarter system best lends itself to this adjustment. Before acceleration, a bare majority of the schools operated on the semester plan; more employed the trimester than the quarter system. Under the accelerated plan the majority of schools prefer the quarter system.[5]

The Association's recommendation that each of the four academic sessions consist of not less than 32 weeks of instruction is apparently being followed. It is imperative that there be no cutting of corners here; this time requirement, aimed at maintenance of standards, is one provision of the accelerated program which can and must be met by every school.

Requiring sessions of 32 weeks permits a maximum of nine weeks of vacation per calendar year for students and staff.[6] In the schools reporting, the average vacation period is six weeks (except for the senior year, where the average vacation period is 5.3 weeks). This allows for academic sessions of 34.5 weeks each, which is well above the minimum recommended by our Association. Vacation periods of three weeks or less (in at least one of the four academic sessions) are provided by thirteen schools. It is questionable whether this short vacation is consistent with the well being of students and staff. Vacations of eight or nine weeks (in at least one of the four academic sessions) are scheduled by twenty schools. Perhaps this is more than is necessary. Probably the average of six weeks' vacation approximates the optimal period for maximal accomplishment and the preservation of efficiency and health.

THE CURRICULUM

It has been recommended by more than one body which has considered the problem, that, for war purposes, no drastic change be made in the curricula of medical schools as now established, but that subjects of military importance be stressed within the content of courses already existing. Practically every school is following these suggestions. The most commonly cited examples of subjects now being stressed in courses previously in the curriculum are traumatic surgery

(and related subjects pertaining to wounds and burns), tropical medicine, shock and hemorrhage, preventive medicine and allied topics, and aviation medicine.

The recommendations of the Committee on the Teaching of Military Medicine (under the chairmanship of Dr. Edwin P. Lehman) for the establishment of certain new wartime courses have been adopted by many schools: 32 schools have established new courses in first aid; 14 in war medicine (as a senior course reviewing or emphasizing topics of war significance) and 13 in tropical medicine. Twenty schools report no new wartime courses whatsoever. Undoubtedly some of these schools have incorporated the subject matter of first aid, war medicine, and tropical medicine into courses previously in existence. Unless this is the case, or unless the subjects recommended by the committee had been presented before the war (which seems unlikely), the reports of that committee should be reconsidered by those schools which have established no new wartime courses.

Almost all schools report that they have found it unnecessary to modify the curriculum or teaching methods appreciably[7] or to change the hours of instruction in the established curriculum.[8] This indicates that new wartime subjects are mainly added material for student and instructor.

It is significant and fortunate that there is no general tendency to sacrifice preclinical instruction to provide time for wartime subjects, most of which are clinical in nature. To weaken greatly the training in the basic sciences is indefensible, even in wartime. Our first aim, even in the production of physicians for the armed forces, is a sound general medical training.

Recommendations of the Office of Defense, Health, and Welfare Services to eliminate courses which can be given up during the war have resulted in only twelve schools reporting that this has been done. Such courses are mainly electives and "non-essential" courses. That 51 schools report no appreciable elimination of courses probably reflects the care with which our peacetime medical curriculum has been prepared, and the feeling that little, if any, of it is non-essential, even in wartime. Only seven schools have acted on the recommendation to enter into joint teaching ventures with neighboring schools. Probably still fewer will engage in such enterprises to a significant degree. This plan is impossible in many cases and is probably of very limited applicability and value in even the most favorable localities.

RESEARCH

A considerable reduction in non-military research has occurred in more than one-half of the medical schools.[9] This unfortunate effect of the wartime program is of great importance not only because the advancement of knowledge is a vital function of every medical school worthy of the name, but because a teacher at the University level is at his best only if he participates in that advancement of knowledge through research. Both the added load of the accelerated program per se and the loss of staff have contributed to this result, although it is difficult to determine the relative importance of these two causal factors. However important it may be in the research of wartime to seek mainly quick answers to practical problems, it would be disastrous to medical education and medical science were this attitude to become habitual, persisting after the war.

The great reduction in student participation in research under the accelerated program is a necessary evil much regretted by those schools which encouraged student research and, in the past, provided sufficiently flexible schedules to permit such elective research by qualified students.

STUDENT AND FACULTY REACTIONS

The majority of schools report favorable reactions to the accelerated program by students and faculty.[10] Many administrators were surprised at the extent of the favorable student response. Students were said to be "highly pleased," "glad to hasten graduation," "improved in scholarship," and "more industrious." While faculty reactions were generally favorable, glowing terms were infrequently used, and, in the main, the attitude seems to be a willingness to assume added burdens as an emergency measure. "We are at war and it is necessary."

Relatively few anticipate an appreciable decrease in quality of instruction except as a result of possible further losses of faculty. Fear of fatigue of faculty and students with consequent deleterious effects on health under the strain of the program were likewise expressed infrequently, although this possibility, especially among students, occurs to all of us as a matter to be watched carefully.

THE INTERNSHIP

Only five schools state that they have had, or anticipate, difficulties placing their March graduates. Almost all schools anticipate no difficulty, and it is stated that "hospitals are willing to accept interns whenever they are available" or "there are not sufficient graduates to meet the needs of hospitals" or "hospitals are eager to get them." This would seem consistent with the difficulties many hospitals—including very good ones—are experiencing in obtaining an adequate house staff. One school reports that vacancies in the resident house staff are being filled by students, and that "one-half of our seniors are living in the hospital and are carrying on clinical assignments." Programs for student internships are being formulated by more than one school. The educational value of this plan depends on the attitude of the attending staff. If student interns are regarded primarily as substitute interns enlisted to help carry on the work of the hospital in an emergency, the benefit to the student will be minimal. Only if student interns are selected carefully, and considered primarily as students, with limited clinical experience and much to learn from especially wise staff supervision, will the plan be educationally sound, and perhaps an educational technique of permanent usefulness may be developed.

Although almost all students will probably be placed in internships when they graduate, some may have to wait three or more months. This would partially negate some of our efforts at acceleration, and calls for attempts at still better adjustments of hospitals to the accelerated plan of our colleges.

LICENSURE

In February, 1942, Dr. Walter L. Bierring reported to this Association that statutory provisions required modification in nine states, probably by legislative action, to meet the needs of the accelerated program. It now seems probable that

some difficulty may be encountered in only two or three states. Elsewhere appropriate action of licensing bodies or legislatures has been taken or is anticipated soon. Although there may be delays, it is likely that the remaining states will also adjust to the accelerated program.

SUMMARY AND CONCLUSIONS

The accelerated program is operating reasonably satisfactory. Changes in curriculum and teaching methods are few, with subjects of military importance being stressed.

Fulfillment of the objectives of the accelerated program with the maintenance of high standards of education, and the production of graduates with high qualifications for the practice of military and civilian medicine, depend upon the successful solution of the following three most pressing problems: (1) Keeping at their posts in our schools, a sufficient number of qualified teachers; (2) assuring a continued supply of high grade applicants; (3) adequate financing of students.

APPENDIX

(Items are numbered to correspond with footnote numbers in the text. Note that the total number of schools is not the same in different items; not all schools reporting replied to each question.)

1. Twenty-three schools report that losses of faculty have hampered teaching minimally; 23 moderately and 10 considerably.
2. Thirty-five schools report no faculty members engaged in full time nonmilitary war work; there are 5 or less men so engaged in 10 schools; 5 to 10 men in 4 schools, and 10 or more men in 9 schools.
3. Fifty-nine schools anticipate no difficulty in obtaining a 1943 class of high quality.
4. In 62 schools only 32 students were unable to commence the accelerated program for financial reasons.
5. Sixty-five schools report that before acceleration, 34 operated on the semester plan, 17 on the trimester plan, and 14 on the quarter plan. On the accelerated program, 34 employ the quarter plan, 21 the semester plan, and 10 the trimester plan.
6. Under the accelerated program one calendar year includes one and one-third academic sessions of 32 weeks per session, totaling about 43 academic weeks, leaving a maximum of about 9 weeks for vacation.
7. Three schools report considerable modification, 14 moderate modification, and 50 minimal modification of the curriculum.
   Three schools report considerable modification 19 moderate modification and 45 minimal modification in teaching methods, most of which changes are adjustments to reductions in staff.
8. Forty-nine schools report no change in hours of instruction in previously established courses; 14 report a decrease in hours in some courses, and 4 an increase in hours in some courses.
9. Nonmilitary research has been reduced "minimally" in 12 schools; "moderately" in 14 schools; "considerably" in 24 schools and has been almost entirely stopped in 6 schools.
10. Forty-three schools report favorable student reactions to the accelerated program; 11 report unfavorable reactions.
    Forty-five schools report favorable faculty reactions; 12 report unfavorable reactions.

DISCUSSION

DR. JOHN WALKER MOORE (University of Louisville): We are all experiencing a decided reduction in the members of our resident staff over previous years, and we are told to be prepared for a further slice in personnel. To offset, in a way, these losses we are trying an experiment in the Louisville General Hospital with twelve senior students. These men are taken into the hospital as interns. That is to say, they have living quarters in the hospital and are paid the same salary as our present junior interns. Six of this group are on the straight services and six are on the usual rotating service. The length of time of those on the straight services is arrived at by adding the hours devoted to the subject both in the senior year and the intern year. The members of the rotating group will be eligible next year for the service of senior internships in any of the medical branches, whereas, those on the straight services, take on the duties of a senior intern toward the latter part of the services. These men are graded on ward and other hospital work, together with a final examination. In case of those on the straight service, the examinations are held just before they leave a service, whereas, those on the rotating service take their examination at the end of the year.

Medical Research in Wartime*

E. Cowles Andrus
Assistant to the Chairman, Committee on Medical Research
Washington, D. C.

The topic which your Secretary assigned me is flatteringly broad. I am afraid I cannot quite live up to it, or presume to discuss Medical Research in Wartime in general. I believe that I can, perhaps, contribute to your program best by describing the activities of the Committee on Medical Research with particular reference to its prescribed function, and to clarify, to those who may not be familiar with them, the relationships between the National Research Council—in particular, its Medical Division—and the Committee on Medical Research. To do that, I must go back a while.

During the Civil War, President Lincoln appointed a group of scientists to advise the government, the Army and the Navy in matters arising from the war. That group was the National Academy of Scientists. During the first World War, the National Research Council was appointed for the purpose of broadening somewhat the membership of this advisory body to the government.

In 1940, the Medical Division of the National Research Council was requested by the Surgeons General to appoint certain committees to advise them on medical problems arising from the emergency. The first committees which were formed had to do with problems of chemotherapy. It soon became evident that other problems required discussion, and other committees and subcommittees were formed, and, in particular emergencies or for particular questions, conferences were appointed, ad hoc. There are now under the Medical Division of the National Research Council more than forty committees, subcommittees and conference groups. The membership now amounts to nearly 200. It is intended that these committees shall provide informed opinion in fields of medicine and surgery and, as well, familiarity with the facilities of institutions and universities for research in particular directions. The members of these committees serve without compensation. They have devoted their time and energy most unselfishly, often at great inconvenience, and sometimes at no little expense to themselves.

Liaison officers to each committee are appointed by the Surgeons General from their own staffs. It is the purpose of this arrangement that details of a request for information or an opinion may be transmitted to the committee at its meeting through the liaison officer, and that he may sit with the committee, contribute to the discussion, clarify the understanding of the organizational and perhaps strategic aspects of the problem. He is not a voting member of the National Research Council committee.

Early in the course of this arrangement it became evident that in many instances research was required to give a considered opinion or an authoritative answer to questions raised by the armed services.

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*Read at the Fifty-third Annual Meeting of the Association of American Medical Colleges, held in Louisville, Kentucky, October 26-28, 1942.

In 1940, a special group had been set up to organize investigation in the field of instrumentalities of warfare, physics, chemistry and engineering. This was the National Defense Research Committee. Under its direction many problems in this field which have been referred from the services, have been made the subject of research. In 1941, the Committee on Medical Research (CMR) was established by executive order of the President as a part of the Office of Scientific Research and Development (OSRD). This is composed of two branches, the National Defense Research Committee and the Committee on Medical Research.

The committee consists of four civilians appointed by the President, who serve without compensation, and three members from the armed services representing the Army, the Navy and the Public Health Service. The civilian members are Dr. A. N. Richards, chairman; Dr. Lewis H. Weed, vice chairman; Dr. A. Baird Hastings and Dr. A. R. Dochez. The service members of the committee, Colonel Simmons, Admiral Smith, and Dr. Thompson, are voting members.

The Office of Scientific Research and Development and, by implication, the Committee on Medical Research, was assigned certain duties in the executive order which established it. Specifically, the Committee on Medical Research is charged with advising the Director of the Office of Scientific Research and Development. That office is directed to coordinate, to aid, and, where desirable, to supplement, the activities in research carried out in the Departments of War and Navy, and the other departments and agencies of the government; to initiate and support research affecting the national defense, or such research as may be requested by the government of any country whose defense the President deems vital to the defense of the United States.

The Committee on Medical Research is directed to advise and assist the Director of the Office of Scientific Research and Development in the performance of his medical research duties. To this end, it is the responsibility of the committee to recommend to the Director the need for, and the character of, contracts to be entered into with universities, hospitals and other agencies conducting medical research activities for research and development in the field of the medical sciences. Furthermore, the committee may, from time to time, on request of the Director, make findings and submit recommendations with respect to the adequacy, progress and results of research on medical problems related to the national defense.

There has thus been provided an advisory body, the National Research Council, acting to advise the medical branches of the armed services, and an agency to sponsor medical research directed to the war effort—the Committee on Medical Research. The chairmen of the National Research Council Committees and Subcommittees are consultants to the Committee on Medical Research.

From the orders establishing the Office of Scientific Research and Development, there emerged certain stipulations which are worth some emphasis. These have been translated into certain more or less definite policies of the Committee on Medical Research. The chief function of the Committee on Medical Research is research. The function of medical advisor to the armed services is vested in the Division of Medical Sciences of the National Research Council.

The field of interest of the Committee on Medical Research has been interpreted as concerning principally the health of the armed forces at home and abroad. Civilian problems are not excluded, but are included by virtue of their relation to the problems of the Army and Navy. It is, moreover, the practice of the committee to concern itself almost exclusively with questions initiated by the armed forces, and to seek the opinion of the representatives of the Army and Navy before embarking on any program of research. The Committee on Medical Research is, therefore, an effectuating or implementing agency to provide contact with facilities of research in the country for the benefit of the armed services by means of government contracts.

The Committee on Medical Research looks to the Medical Division of the National Research Council for advice regarding problems which are deemed urgent by the services. When specific questions are referred from the Army or Navy, some one of the committees of the National Research Council is given the responsibility of identifying the most promising method of attack and suggesting the laboratories qualified to conduct the investigation. When that is done, a proposal is submitted for research under contract between the government and the institution in which the work is to be undertaken. This proposal is considered by the appropriate committee or subcommittee of the National Research Council. It is discussed in the presence of the liaison officers, and their opinion as to its implications is frequently requested. It is then referred, with recommendations and comment, to the Committee on Medical Research. If it is approved by the Committee on Medical Research, it is recommended to the Director of the Office of Scientific Research and Development for the preparation of a contract.

Some proposals have been submitted to the Committee on Medical Research through other divisions of the National Research Council: The Division of Chemistry or, in case of projects regarding nutrition, the Division of Biology and Agriculture. In many other cases individuals or groups of investigators have identified problems of urgency to the war effort and have submitted proposals directly which have led to contracts.

The contracts are written on the basis of one year, or sometimes less, subject to renewal on approval, and on the basis of reimbursal for expense. They are not, in that sense, grants in aid. To the proposed budget there is usually added a figure which is determined on the basis of percentage of the salary items to compensate the university for overhead expense in connection with the contract.

Since August, 1941, when the committee first met, it has recommended for contracts 255 projects in medical research. These are, or have been, in progress at institutions in twenty-seven states and in Panama. Under them there are currently employed 467 doctors of medicine and 331 individuals with Ph.D. degrees. Those figures include women, physically disqualified physicians and those above the draft age, and some within the draft age, who are considered by responsible investigators and by their universities as essential.

The total allocation of funds for these projects amounts to slightly over four million dollars. The subjects of investigation reflect problems of war, naturally,

more than those of peace. The largest number of projects is in the field of aviation medicine, others deal with wound shock, the treatment of gas casualties, blood substitutes and transfusions, wounds, burns, surgical infections, infectious diseases, tropical diseases, neurosurgery and nutrition.

In the field of aviation medicine, several refrigerated decompression chambers have been provided, and groups of investigators have been organized, pooling the skills and techniques of physiologists, biophysicists, pharmacologists and clinicians, to study all phases of the effect of altitude, anoxia and cold. Other groups are developing and testing apparatus to supply oxygen under conditions of low barometric pressure, or devices to protect pilots against the unprecedented degrees of centrifugal force which may develop during some maneuvers of combat in modern planes. The treatment of shock has advanced since the last war, particularly in the development of means to prepare and to store blood fractions for intravenous administration. The Committee on Medical Research has sponsored projects to improve methods of drying plasma, to prepare blood proteins in pure form, and even to develop substitutes for human plasma. Several projects concern the preparation of potable water from sea water. Others provide for research on the preparation of certain vaccines. In the field of nutrition, several projects deal with the nutritive qualities of dehydrated foods. Among the investigations of surgical problems, particular attention is devoted to neurosurgical complications, such as nerve injuries and cerebral concussion, the treatment of burns and infected wounds.

The committee has maintained an active interest in the development, manufacture and testing of penicillin.

The possibility that the forces of the United States may be exposed to insect vectors of tropical and other insect-borne diseases, has brought about the fostering of a thorough search for adequate insect repellents and insecticides.

These are only a few examples of the fields of investigation in which the resources of the Army and Navy are being supplemented by civilian research. But that is only one-half the job, and a considerable portion of the committee's activity and that of the National Research Council is devoted to getting the information derived from such research to others working in the field, to the armed forces, and to our allies. In this capacity, the National Research Council is currently a contractor of the Committee on Medical Research.

The various investigators in different fields are encouraged to meet periodically, either in each other's laboratories, or at Washington, to discuss the results of their investigations and to exchange views. Each contractor submits a monthly or bimonthly report on the progress of his investigation. As results warrant, he is invited to submit a somewhat more detailed, longer, interim report. At the termination of the contract, a complete report of the investigation is required. These reports are reproduced or abstracted, depending on their length, and distributed promptly to the other contractors conducting investigations in the same field, to the services, to the National Research Council committees, to the National Research Council of Canada, to the National Health and Medical

Research Council of Australia, and the Medical Research Council of Great Britain. The minutes and reports of the committees of the National Research Council are likewise distributed widely, and the National Research Council receives from Canada and abroad the minutes of the advisory committees to the Canadian, Australian and British armed services. The Committee on Medical Research is continually represented in London by at least one liaison officer who transmits weekly reports, and a representative of the Medical Research Council of Great Britain is accredited to the Committee on Medical Research and the National Research Council and has a desk in their offices in Washington.

Finally, special observers are sent to England from time to time for short visits to study the research program organized by the British in special fields.

Thus, with the cooperation of many of the schools and universities represented here, there has been provided, through the Committee on Medical Research and the National Research Council, a considerable organization of research facilities and personnel to deal with the medical problems referred by the Army and Navy.

DISCUSSION

DR. FRANCIS S. SMYTH (University of California): Is there any special technique for such members of the faculty engaged in these research projects who are giving less than 25 per cent of their time to strict teaching; perhaps it is safer to say who are devoting all of their time to this research? If I understood Dr. Andrus correctly, it is up to the university to catalog them, and Dr. Lahey asks us to use this yardstick of 25 per cent of the time. With some of these projects, it would appear that our faculty list of essential men is a bit padded, as it were, for the research program. I would like some clarification on it.

DR. ANDRUS: I am not sure I understood the crux of your question.

DR. SMYTH: How would you classify a faculty member who has given up his teaching so that he devotes most of his time to research and, therefore, does not come under the yardstick for our teaching group of essential men?

DR. E. COWLES ANDRUS: I would like it understood that what I am about to say is my own opinion. I cannot prejudice the Committee on Medical Research in this regard, but I think I reflect their views. The Committee on Medical Research is particularly anxious not to arrogate to itself any of the functions of Selective Service or of priority boards. At the same time, it is a branch of the executive office of the President. It is charged by an executive order with the performance of certain duties. It has contracted with certain universities for the carrying out of those duties. It is to be understood that to the successful conclusion of those contracts certain personnel is essential. I believe, although I will not speak for Procurement and Assignment, that the Procurement and Assignment recognizes that in the directives they have sent out. If a man is essential to a research project under the Office of Scientific Research and Development, as recommended by the Committee on Medical Research, it is your privilege to classify him as such, and the committee on Medical Research will endorse your request for his deferment.

DR. JOHN A. FERRELL (Rockefeller Foundation, International Health Division): May I ask Dr. Andrus if the set-up he has described in such an interesting manner is available in stenciled or printed form? He mentioned about forty committees, each with a stipulated responsibility related to the war effort. If the set-up is available, we might better inform ourselves regarding the personnel of the organization. I am interested to know also of the

immediate source of funds and approximate amounts placed at the disposition of these committees and as to the governmental unit that makes the disbursements and audits the expenditures.

DR. E. COWLES ANDRUS: The list of the National Research Council committees is available on application to the Medical Division of the National Research Council. It is not in print, because it is changing continually, but the most recent copies can be obtained, I am quite confident, by applying to the National Research Council. The Committee on Medical Research is not, in any sense, the counterpart of a philanthropic foundation in peacetime. It is provided with funds for the purpose of answering questions raised by the armed services. Its consideration of proposals is governed not necessarily by the fundamental value of the research, but by the urgency of the question to the armed services and by the probability of obtaining an answer within a predictable time.

DR. JOHN A. FERRELL: I take it for granted that the President has a fund that is allocated to cover the cost of personnel, supplies, etc., for these studies. Is it not a Congressional appropriation?

DR. E. COWLES ANDRUS: The funds are allocated to the Office of Scientific Research and Development under the Office of Emergency Management.

DR. FERRELL: That is not under any particular office's field of responsibility?

DR. ANDRUS: It is part of the executive office of the President.

DR. CHAUNCEY D. LEAKE (University of Texas Medical School): Would it be appropriate to ask whether or not the geographical representation of personnel of various committees might be extended, since the committees have the responsibility of suggesting the most appropriate men to carry out the pieces of research that are desired, in the most appropriate laboratories? Is it not true that restriction of personnel to a relatively small geographical area tends to make it difficult for the committees to know what is available throughout the country as a whole?

DR. E. COWLES ANDRUS: That question has been raised in California, and now I see it being raised in Texas. I think an honest attempt has been made to distribute the geographical membership of committees, having in mind the contributions which the individual members can make; and the possibility of their getting to meetings. Dr. Leake may not agree with that. It is a matter which is the particular responsibility of the National Research Council. The contracts are certainly distributed widely.

Accomplishment of the 1941-1942 Freshman Class of the Medical Schools of the United States and Canada

Fourteenth Study

FRED C. ZAPFFE
Secretary, Association of American Medical Colleges
Chicago, Illinois

Since 1928, an analytical study has been made of the accomplishment of the freshman in the medical schools of the United States and Canada. The purpose of the study is to furnish data on how many students come through with a clear record, how many have subject conditions and failures, how many failed, were dropped or withdrew because of poor or failing scholarship and how many withdrew because of illness, family reasons, lack of finances. In some cases, the reason for withdrawing was not stated. It is probable that in many of these instances, failing scholarship was the cause; the student either decided to discontinue the study of medicine, or returned to college for further preparation. A few of these students return—the following year or later—as repeaters. Therefore, all withdrawals are counted in this study as "outs."

The data contained in the reports made by the colleges are used to make the Student Register in which every student in attendance in a medical school has a card on which his scholastic record is recorded in full as well as his standing in class by thirds. Another register, the College Register, contains cards, one for every college or university attended by the students in preparation for the study of medicine. Each year all these colleges, about 570 in number, receive a report on their students and every medical school receives a composite report showing how the students from all colleges fared in medical schools. This information is an aid in the selection of future students.

Each number shown in this report on accomplishment represents the name of a student as reported by the colleges. Therefore, the total number of students must be accepted as being accurate although it may be at variance with other figures reported elsewhere. Every year, the Association receives from every medical college an enrollment blank for each student entering on the study of medicine for the first time. Sometimes a blank for repeaters is sent, sometimes not. Hence, the number given for enrollments never is as large as the total number of students reported at the end of the college year. For example, in 1941, we received enrollment blanks for 6,269 students. At the end of the year, reports were received for 6,420 students. The difference between these two figures (151) represents, in the main, repeaters for whom no enrollment blanks were

received at the beginning of the year. Then, too, a few students drop out soon after the beginning of the course who may not be reported at the end of the year.

COLLEGE DATA

The 6,420 students, an increase of 359 students over 1940, came from 569 colleges (557 in 1940). Eighty-two of these colleges were not approved by any accepted accrediting agency other than a state university. They contributed 206 of the 6,420 students (79 nonapproved colleges in 1940; 173 students). It is often stated by those who do not have accurate information, that only 20 per cent of applicants for admission to medical schools are accepted. This is not true. For many years (since 1926) the Association of American Medical Colleges has made a study of applicants. Never, in any year, have fewer than 50 per cent of those applying been accepted—although not all applicants accepted matriculate. From 8 to 10 per cent do not matriculate. In 1940, 53.3 per cent of the approximately 12,000 applicants were accepted; in 1941, 57.2 per cent were accepted but about 550 accepted applicants did not enroll. Acceptance is based on many factors. Every medical college endeavors to select the best of the students making application—up to its quota—based on many factors, such as scholarship in college, the rating in the aptitude test, personal interviews, psychological and personnel tests, etc. It must be evident that some good students fail of acceptance because every college can only accept a number determined by facilities available. The care with which selection is made is definitely shown by the number of failures each year. For example, in 1939, 13.2 per cent of all

TABLE 1.—ACCOMPLISHMENT OF "OWN" (2463) AND "OTHER" (3957) STUDENTS AND BOTH GROUPS (6420)

Preparation	Own—(2463) 37.8%				Others—(3957) 62.2%				Own & Others—(6420)				Totals	
	Cl.	Enc.	Out	W.	Cl.	Enc.	Out	W.	Cl.	Enc.	Out	W.		
	%	%	%	%	%	%	%	%	%	%	%	%	No.	%
2 years	95.2	2.4	2.4		70.1	16.4	9.0	4.5	79.8	11.0	6.4	2.8	109	1.7
3 years	86.0	7.8	4.4	1.8	80.4	8.4	8.6	2.6	83.9	8.1	5.9	2.1	2150	33.5
4 years	75.3	13.0	8.4	3.3	77.0	7.4	13.7	1.9	76.2	10.1	11.1	2.6	315	4.9
A.B.	82.5	9.1	6.1	2.2	81.0	10.0	6.7	2.3	81.4	9.7	6.6	2.3	2273	35.4
B.S.	80.3	9.8	6.7	3.2	78.0	10.8	8.3	2.9	78.4	10.6	8.0	3.0	1573	24.5
Totals	83.9	8.7	5.3	2.1	79.8	9.9	7.7	2.6	81.2	9.4	7.0	2.4	6420	

Symbols: "Cl."—clear; "Enc."—encumbered; "Out"—failed, dropped, withdrew, failing scholarship; "W"—withdrew other reasons or reason not stated.

freshmen failed of promotion; in 1940, 8.7 failed; in 1941, 9.4 per cent failed of promotion. The increase in failures in 1941 can, no doubt, be accounted for by the increase in the size of the class and the possibility of errors in judgment of selection, because virtually all medical schools went on an accelerated basis as a war emergency measure which necessitated some haste in selection.

ACCOMPLISHMENT OF FRESHMEN

Table 1 summarizes, in percentages, the accomplishment of 6,420 freshmen; 351 were women (330 in 1940). The class is divided into two groups, (1) "own," representing the students who entered the medical school of the univer-

sity in which they prepared for the study of medicine; (2) "others," the students who attended some other medical school. There were 2,463 "own" students and 3,957 "other" students. The class is so divided in order to show the difference in the accomplishment of the two groups. It is understandable that the "own" group would make a better record than the "other" group because the medical school is in better condition to select students from this group than from the group coming from the outside. College records are at hand; instructors can easily be interviewed about the desirability of accepting a student; personal interviews are, as a rule, easily possible. In the case of "other" students, reliance must, in the main, be placed on college credits and, perhaps, a written appraisal made by several instructors, rarely a reliable source of information. As a matter of fact, often colleges receiving reports on their students complain that their recommendations—good or bad—were not heeded. A student who was not recommended for acceptance failed and the college is unwilling to regard this failure as a "black mark" against the college. It will be noted that only about 38.3 per cent of the 1941 freshman class consisted of "own" students. Some medical schools accept very few of their "own" students; a few accept a large number for local reasons.

PREPARATION OF STUDENTS

It is interesting to note how much preparation these students had before entering the medical school. Although the minimum requirement of the Association of American Medical Colleges for admission is two years of college work, very few students come with less than three years of college work. A few students present credits for only two years (60 hours); some have credit for 65, 70, 72 even 80 hours. Only 109 students, 1.7 per cent, of the 1941 class fell into this category (99; 1.6 per cent in 1940). The three years group numbered 2,150 students, 33.5 per cent (1,680; 28.2 per cent in 1940); the 4 or more years group—without a degree—numbered 315 students, 4.9 per cent (361; 6.1 per cent in 1940); the A.B. group—including the students who had more than the A.B. degree—numbered 2,273 students (2,236; 37.5 per cent in 1940). The B.S. group—including multiple degree holders—numbered 1,573, 24.5 per cent (1,585; 26.6 per cent in 1940). Thus, 59.9 per cent of the students held a degree; 40.1 per cent did not. In 1940, 64.1 per cent had a degree; 35.9 per cent did not. Multiple degrees were held by 120 students (163 in 1940).

Comparing the accomplishment of the "own" and "other" groups, some extremely significant data appear. First, the "own" group did far better than the "other" group in every way. There were more clear records; fewer encumbered records (subject conditions, failures and incompleted work); fewer "out" (failed; dropped; withdrew poor or failing scholarship) and fewer withdrawals (illness; lack of finances; reason not stated), than in the "other" group which must be accepted as evidence of better selection of students for the reasons stated above (selection easier). It is also evident that either selection for the 1941 class was better than it was for the 1940 class—or the quality of the students was better despite the fact that for the class as a whole there were more failures and withdrawals in 1941 than in 1940, but there were more clear records and fewer

encumbered records. Doubtless the increase in the 1941 class over the 1940 class may have represented a rather good quality of student on the whole.

The accomplishment of the various groups set up on the basis of preparation is shown in table 1. The two year "own" students made a remarkably good record. All but two of the 42 students in this group had a clear record; one had a condition and one was dropped. The record of the "other" two year students (67) is not so good; in fact, their record was worse—except for failed students—than that of any other group. The medical schools made a good selection from their "own" students but did not do so well with the "other" students.

The three years group is the banner group in every way. It had the most clear records, the fewest encumbered records, fewer failures and fewer withdrawals. The A.B. group is second, the two year group third; the B.S. group fourth and the four or more years group fifth. In 1940, the standing of these five groups was the same as in 1941. These data give much food for thought. Is the bachelor's degree of as much value as an index of good preparation for the study of medicine as some hold that it is? Has the selection of studies or courses been good? Does the student who plans to attend college for only three years before entering medical school choose more wisely? Has he had the benefit of

TABLE 2.—ACCOMPLISHMENT OF STUDENTS HOLDING MULTIPLE DEGREES (120)

Degree	Clear No.	Encumbered No.	Out No.	Withdrew No.	Totals
A.B., A.M.	39	2	4	3	48
A.B., B.S.	5		1	1	7
A.B., M.S.	12	2	2	1	17
A.B., B.S., A.M.	1				1
A.B., A.M., Ph.D.	6	1			7
A.B., B.S., M.S.	1				1
B.S., M.A.	3			1	4
B.S., M.S.	18	4	5		27
B.S., M.S., PhD.	5	1			6
B.S., M.A., Ph.D.	2				2
Totals	92—76.6%	10— 8.4%	12—10.0%	6— 5.0%	120

better advice? Is he naturally a better student? Or has the college whence he came been an influence? A study of the College Data record could perhaps, give some information which would make possible answering these questions. I believe it would. Having had the opportunity of working with these data for fourteen years, I have some definite views on this point. At any rate, here are the figures.

It has been said that many college students hold the conviction that entrance to a medical college is made easier if a bachelor's degree can be offered for admission. Perhaps, the fact that some medical colleges prefer to consider only those applications which come from a "bachelor" (only one school absolutely requires a degree for admission and one school limits its acceptances to "bachelors") may have given rise to this point of view. True, in 1941, fewer accepted students held a bachelor's degree than was the case in 1940, but here,

again, the need for enrolling more students in 1941 than in 1940, and somewhat hastily, may have cut down this percentage by 4.2 per cent. Despite this fact, however, there was no change in the relative standing as to accomplishment of the degree holding and the nondegree holding groups. They did better—except for failures and withdrawals—in 1941 than they did in 1940. There were more clear records; fewer encumbrances but more failures and withdrawals.

The four years group is an interesting one. Some of the students in this group have been in college for as long as 10 years. Many of them must be undecided as to what they intend to do until near the end they make up their minds to study medicine. Those who attended just four years and yet did not receive a degree must have taken a rather mixed course of studies which, however, did include the subjects needed to meet the minimum requirements for admission to medical school. They never have done well in medical school. They always stand fifth, usually a rather poor fifth. It would seem that extreme care should be exercised in the selection of medical students from this group. They certainly pull down averages.

THE MULTIPLE DEGREE STUDENTS

Table 2 presents the data on the students who held more than one degree—120 in number. One fact stands out clearly—the group as a whole does not do as well as do students outside of the group. They had far fewer clear records; more encumbered records, failures and withdrawals. Why should this be so?

TABLE 3.—ACCOMPLISHMENT OF WOMEN STUDENTS (351)

Preparation	Clear %	Encumbered %	Out %	Withdrew %	Totals No.	Totals %
2 years	50.0	50.0			2	0.6
3 years	79.2	7.8	11.7	1.3	77	21.9
4 years	84.6		7.7	7.7	13	3.7
A.B.	83.5	7.4	4.0	5.1	175	
A.B., A.M.	89.0		11.0		9	53.6
A.B., M.S.	66.6		33.3		3	
A.B., A.M., Ph.D.		100.0			1	
B.S.	76.1	12.0	8.9	3.0	67	20.2
B.S., M.S.	75.0		25.0		4	
Totals (%)	80.6	8.3	7.4	3.7	351	

It has been said that they represent an older group of students. Yet, greater maturity has been regarded by some educators as an advantage. Then, they have been away from fundamentals for a longer time. They have concentrated effort in one field. It has even been said that they have a superiority complex which does not make for good application to subjects regarded as of less significance. The truth of the latter view has been shown often by a student who, for example, had bacteriology in college; was an honor student, yet failed in bacteriology in the medical school! This instance can be multiplied. Medical colleges insist that they do not want their students to come with credit in any subject which is contained in the medical curriculum because experience has shown that it does

affect the quality of the work which a student does in the medical school. However, all this is speculation, more or less. Table 2 gives the facts as to what happened. Ten per cent of this group failed—as against 7.0 per cent for all students—and 5 per cent withdrew—as against 2.4 per cent for all students.

ACCOMPLISHMENT OF WOMEN STUDENTS

Table 3 presents, in percentages, the data on the accomplishment of the women medical students—351 in number (330 in 1940). The record compares favorably, on the whole, with the accomplishment of the men students except that the withdrawals were more numerous and those with multiple degrees did badly, more so than the males. The percentage of failures in that group was large. Nor did those with three years of college work do as well as did the males. Twice as many failed of promotion. Only 2 of the women had less than three years of college work and 73.8 per cent held degrees. The one Ph.D. ran into difficulties.

TABLE 4.—ACCOMPLISHMENT OF REPEATERS (151)

Preparation	Own (58)				Others (93)				All				Totals	
	Cl. %	Enc. %	Out %	W. %	Cl. %	Enc. %	Out %	W. %	Cl. %	Enc. %	Out %	W. %	No.	%
2 years	66.6			33.3	66.6		33.3		66.6		22.2	11.2	9	5.9
3 years	71.0	9.7	16.1	3.2	75.0		20.8	4.2	72.8	5.5	18.1	3.6	55	36.4
4 years	100.0				60.0		40.0		80.0		20.0		10	6.6
A.B.	100.0				83.3	4.2	8.3	4.2	89.2	2.7	5.4	2.7		
A.B. A.M.	100.0				50.0	50.0			66.6	33.3			41	27.0
A.B. B.S.					100.0				100.0					
B.S.	80.0		20.0		67.7	3.3	29.0		69.4	2.8	27.8		36	24.0
Totals	81.0	5.2	10.4	3.4	73.1	3.2	21.5	2.2	76.2	4.0	17.2	2.6	151	

REPEATERS

The repeater is always a problem. It has long been a matter for argument whether a failing student should be permitted to repeat. True, in some cases there are mitigating circumstances which are a reason for allowing repetition. Environment often is a cause for failure. Only those students who have failed are counted as repeaters. No other reason labels a student as a repeater. If he drops out because of a reason other than failing scholarship, he is not counted as a repeater. Therefore, the 151 students listed as repeaters were failures. Table 4 shows that nearly 75 per cent of repeaters make good on second trial, but considering the failures of nonrepeating students and those of repeaters it must be admitted that repeaters have a high percentage of failures—19.8 per cent as against 9.4 per cent for the whole class. And 51.0 per cent held bachelor's degrees! The B.S. students did worse than any others, 27.8 per cent failing. Again, the "own" students did better than the "other" students, no doubt because of better selection for the reasons previously stated.

STUDENTS FROM NONAPPROVED COLLEGES

The requirements for admission of the Association of American Medical Colleges permit acceptance of applicants coming from nonapproved colleges, provided the students from these colleges are granted admission by the university

of the state in which the college is situated. That fact is accepted as recognition even though no regional accrediting agency has approved of the college. The 82 colleges in this group furnished 206 students (173 in 1940). Fifty-five students (Table 5) held a bachelor's degree; 11.6 per cent had less than three years of college work as against 1.7 per cent of the whole class. Many of these students came from junior colleges.

TABLE 5.—ACCOMPLISHMENT OF STUDENTS FROM NONAPPROVED COLLEGES (206)

Preparation	Clear %	Encumbered %	Out %	Withdrew %	Totals No.	Totals %
2 years	50.0	17.0	21.0	12.0	24	11.6
3 years	77.2	7.0	12.3	3.5	57	27.7
4 years	50.0		50.0		10	4.9
A.B.	69.4	18.4	10.2	2.0	49	23.8
B.S.	68.2	16.7	12.1	3.0	64	32.0
B.S., M.S.	50.0		50.0		2	
Totals	68.0	13.5	14.5	4.0	206	

The accomplishment of these students was not as good as that of other students. Only 68.0 per cent had a clear record (71.6 per cent in 1940); 14.5 per cent failed; 4.0 per cent withdrew. Although the reason for withdrawal, in most cases, was not stated, it is probable that failure to get on was the reason. These boys were not prepared for the study of medicine. It is evident that serious consideration should be given before any student from a nonapproved college is accepted. However, every case should be adjudicated on its merits rather than to refuse readmission in principle because the applicant comes from a nonapproved college. After all, better than two-thirds of them do well in medical school. These findings stress the fact that the perfect method of determining whether to accept or not has not yet been devised. Medical schools cannot help but accept a poor student sometimes. He may do well in college and not in the medical school. The fact that less than 10.0 per cent of all freshmen fail is sufficient warrant for approving of the methods of selection now in use. But, it must be remembered that failures occur in the remaining three years of the medical course.

TABLE 6.—ACCOMPLISHMENT OF SOPHOMORES, JUNIORS AND SENIORS

Class	Total No.	Clear %	Encumbered %	Out %	Withdrew %
Sophomores	5563	83.4	12.1	3.4	1.1
Juniors	5218	89.0	9.9	0.7	0.4
Seniors	5134	97.9	1.7	1.1	0.3

Women: Freshman—351; Sophomore—272; Junior—254; Senior—234.
Total all years—1111.

About 20 per cent of every entering class fails to graduate. Even students who have done well, or fairly well, in the first three years fail in the senior year. Data are not worked up to show how many of the final failures are among the students from the nonapproved colleges. There must be some because often students "get by" by the "skin of their teeth" for a while and then fail in the end.

ACCOMPLISHMENT OF SOPHOMORES, JUNIORS AND SENIORS

Table 6 presents the data on the accomplishment of sophomores, juniors and seniors for the year 1941-1942. In 1938, 5,811 freshman students were reported on by all the medical schools. In 1941, this class, now seniors, had fallen off to 5,134. But some of these seniors had entered medical schools previous to 1938. We found that one student had entered 20 years previously. Therefore, the seniors have amongst their number many students who did not enter in 1938, therefore were not included in the 5,811 students then listed as freshmen.

The number of clear records increases for each class; the number of encumbered records diminishes year by year, as do the number of withdrawals. The number of failures was less for the juniors than for the sophomores but for the seniors it is larger than for the juniors.

The table also gives the number of women students in each of the four classes for 1942. The total is 1,111. Of the 330 women who were listed in the freshman class of 1940, only 272 are reported as being members of the sophomore class in 1941. Many women withdraw to marry and some fail and give up. Women rarely repeat.

TABLE 7.—DATA ON MATRICULANTS IN ALL CLASSES WHO CONTINUE THEIR STUDIES

Year	Freshmen No.	Sophomores %	Juniors %	Seniors %
1938	5811	91.9	86.5	88.3
1939	5871	91.5	88.8	
1940	5961	93.3		
1941	6420			

MATRICULANTS WHO COMPLETE THE COURSE

Table 7 presents the data on the number of students who completed their course, including the repeaters. Here, again, it must be stated that the return of former students who dropped out for one or more years adds to the number of regular students. According to the table, 88.3 per cent of students who entered in 1938 completed their work in 1942. It has been stated that about 80 per cent of entering students fail to graduate. That would seem to be disproved by table 7. But, as stated previously, additions are made to each class of students who were not originally members of the entering class. Often cards are taken out of the so-called "dead" file set up from the Student Register to be returned to the "live" file. These additions are cards of students who failed or dropped out and returned later, after a lapse of one or more years, to resume their studies in medicine. Once a year, an analysis of the graduates is made. In that analysis the continuing students are separated from the interrupting students. These data are published in the JOURNAL OF THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES. From these data, the exact number of continuing students can be ascertained.

THE CANADIAN MEDICAL SCHOOLS

Table 8 presents the data for the medical schools of Canada. All but one of the ten schools cooperated in this study. In some of these schools the arts and medicine course is combined, therefore the table gives listings for six years. The third year corresponds with the first year of the medical schools in the United States. The figures given for these years approximate closely the figures given for our own medical schools.

TABLE 8.—ACCOMPLISHMENT OF STUDENTS IN NINE MEDICAL SCHOOLS OF CANADA (MONTREAL NOT REPORTING)

	1st Year		2nd Year		3rd Year		4th Year		5th Year		6th Year	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Clear	129	52.0	278	80.8	436	79.2	394	82.2	398	87.0	468	96.1
Encumbered	35	14.1	30	8.7	71	12.9	67	14.0	53	11.5	14	2.8
Out	84	33.9	29	8.7	37	6.7	13	2.7	6	1.3	4	0.8
Withdrew	—	—	7	1.8	6	1.2	5	1.1	1	0.2	1	0.3
Totals	248		344		550		479		458		487	
Women	17		27		28		32		19		29	

Total women (9 schools)—152
Graduates, 1941 (9 schools)—534; 1940—555
Total students (9 schools) 1941—2566 (not reporting: Montreal)
Total students (8 schools) 1940—2150 (not reporting: Laval, Montreal)

Although the work involved in making this study is heavy, it could not have been completed without the assistance given by individual colleges. To them, I am grateful. The study gives information which only the Association of American Medical Colleges can give because it is the sole depository for these records which are only a small part of the information on file in the office of the Association. To all whom they can serve, these records and reports are available.

War Time Health and Medical Problems*

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Office of Defense Health and Welfare Services
Washington, D. C.

To the average physician, and particularly to the recent medical graduate, medicine is primarily a scientific discipline; yet when viewed in its broadest aspects, it is a great deal more than that; it is a social force subject to all the pressures of a fluid and flexible society, and requiring continual adjustments which, in order to harmonize with changing conditions, call for statesmanship of a very high order. Some of the problems of medicine which face our country at war and which I shall review this evening, have certain elements which are technical, others which are social and political.

The concept of health as a basic foundation of national strength and unity is not new, especially to an enlightened group such as this; it is not new to the warring nations of the world. The importance of physical and mental fitness is not new to the Germans; lack of it beat them in World War I, and they are now using every scientific technic they know to prevent it happening again. Indeed, the importance of physical and mental vigor finds recognition in every social and political philosophy, whether that philosophy has for its objective orderly and decent human relationships, or whether it is designed for disorderly, indecent, inhuman purposes of aggression and destruction.

Physical fitness, mental alertness, adequate nutrition, industrial hygiene, medical care, public health—all loom larger and larger and stand in ever increasing boldness of relief as the picture of the international scene gradually emerges, showing the struggle among men and nations for the right to live or for the chance to conquer.

Yes, these elements are looming larger and larger as the very warp and woof of the pattern of national existence, where men and women, in an organized society, share the duties and responsibilities for meeting the forces of aggression; because these forces are much more subtle and insidious today than ever before in the history of war. Modern war is, in large measure, a contest of industrial production. Its strategy is not merely to kill soldiers, but to destroy civil institutions, to terrify the helpless and unarmed, to smash civilian morale and to cripple industrial output. It is this kind of strategy that has introduced the phrase "total war;" and from it emerges the concept of "total defense."

Although the man on the street, in appraising war effort, thinks largely in terms of *numbers* of men and *amounts* of materials, you and I know that without healthy men in our Army and Navy, the materials of war which we produce are useless; that without healthy and vigorous workers in our great war industries, the materials will be produced too slowly and will cost too much; that without

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healthy communities to sustain the life of the nation, neither the armed forces nor the war industries can hit the top of their stride; and, that if the burden of preventable illness and death is not lifted from the citizen, the all-out effort which he is expected to make loses much of its meaning. You and I know that basic morale flows not only from faith in what we are fighting for, but also from the confidence that we are *fit* to fight and that each person can measure up in stamina to the job at hand. These facts, though not new, today challenge the medical leadership of our country.

Nearly two years ago, the federal government indicated its awareness of the importance of the health front when the President created the Health and Medical Committee and gave it the job of mobilizing and coordinating the health forces of the nation so that we would be assured that our health defenses would hold in the event we were drawn into war. The Committee has a membership of seven, with an outstanding civilian physician as its chairman, the other members including a civilian dentist, the Surgeons General of the Army, the Navy and the Public Health Service, the Director of the Medical Division of the Office of Civilian Defense, and the Chairman of the Medical Research Committee of the Office of Scientific Research and Development.

The Committee, with its several special subcommittees, functions within the Office of Defense Health and Welfare Services, which is under the able and statesmanlike leadership of the Honorable Paul V. McNutt. In this job of planning and coordination, paramount consideration has been given to the overall needs of the nation, including the requirements not only of our military forces, but also of our civilian population and its institutions. Since the job of the Committee is health preparedness, its work impinges in one way or another on every sector of the health front, including such fields as hospitals, nursing, medical and dental education, industrial health, medical research, public health service, emergency medical care, and drugs, medical supplies and other munitions of health.

One of our biggest jobs has been, and still is, to get public health and medical services established within the several hundred critical defense areas where our fighting forces are being trained and our war materials are being produced. There are more than 400 such areas in the United States and Territories where the influx of new population has created critical problems of public health. The basic facilities for medical care and public health service were lacking in many of the most important regions. The majority of communities in defense areas all over the United States have had to expand their systems for the sanitation and distribution of water and for the disposal of wastes to meet the needs of incoming populations; they have had to strengthen their measures for the sanitary control of milk and other foods; they have had to meet shortages in housing and in facilities for education and recreation; they have had to meet problems of venereal disease control more serious than ever before experienced; they have had extraordinary burdens placed on their hospitals and clinics, wherever any, in fact, did exist; they have had too few nurses, and in many instances too few physicians and dentists.

We have taken the position, in which we have been supported by the Congress, that the federal government has a responsibility for assisting these communities in obtaining additional facilities and personnel to meet the impacts of these war time developments. New hospitals and health centers are being built—old ones are being enlarged; water supply systems are being expanded; more nurses are being trained; public health officers and other personnel are being assigned to those communities where the needs are greatest.

A second major sector in the health front embodies the problems associated with the maintenance of productive workers in our great war industries. The health and efficiency of these workers on the assembly lines are no less essential to victory than the stamina and vigor of the forces on the firing line.

Today, America's industrial commitments are the largest in all human history. These commitments are a reflection of the vastness of her natural resources and of the confidence which she places in the ingenuity of her industrial leaders. To fulfill these commitments, more than ten million workers will be transferred from civilian to war production during the year. Speed and more speed is the industrial "order of the day." Gaps in the production lines are being filled increasingly by women, young adults, and older men whose lack of experienced work habits and physical endurance necessitate safety and health maintenance programs of the highest order.

Already we are experiencing an increase in industrial accidents. Some of these increases are inevitable with round-the-clock schedules, increasing tempo of production, longer hours of work, employment of inexperienced and partially handicapped workers, and partial depletions of technical staffs. New industrial processes are being introduced. There is increased usage of cutting oils and other compounds, many of which cause industrial dermatoses; grinding operations have multiplied, entailing exposures to such materials as aluminum oxide and silicon carbide; shot blast operations are being replaced by sand blasting, a notorious source of silicosis; in the speeding up of pickling operations, increasing concentrations of acids in the pickling tanks present new problems; solvents are being used more widely, new ones are being introduced, most of which are in the chlorinated hydrocarbon group and, therefore, assumed to be toxic; paint spraying operations are being modified requiring radical readjustments in ventilation procedures; and as industry is required to plan for uninterrupted activity during blackout conditions, a whole gamut of problems is raised with respect to proper illumination and ventilation.

These are technical problems. Generally speaking, our large industries have well organized and reasonably effective programs of health supervision to meet them. However, much remains to be done in devising plans whereby the small industries, which, in the aggregate, employ more than two-thirds of our industrial workers, can provide similar services so essential to full production.

Moreover, there is another aspect to the problem which involves more than technical considerations. American industry in 1941 lost more than 400 million man-days of work because of disabling illness. Ninety per cent of this waste was

due to causes not associated directly with the occupation of the worker. We have heard a great deal recently about labor strikes and jurisdictional disputes and the resultant slowing up of production. Serious as these may have been, the lost time which they have occasioned is only a small fraction of that which was due to illness and disability. Lost time from war industries or war connected industries because of illness in any one month would build two heavy cruisers, 448 medium bombers or 3,200 light tanks.

These problems extend beyond the limits of the properties and holdings of industry. They are community problems. They call for health services, hospitals, nurses, schools, physicians, housing! As a consequence, they involve elements which can be approached effectively only through partnership of management, labor, engineering, medicine, nursing and public service, including public health.

Another of the foremost sectors of our health front is nutrition. It has been literally catapulted into its present position of eminence by the revolutionary discoveries of science during the past two decades. To say that food is a munition of war is no play on words. The millionth ton of it from American soil has already arrived safely in England; and no one doubts that this has thwarted the Nazi attempt to starve England into submission.

Since we have scarcely begun nationally to face our problems of undernourishment and faulty nourishment, it was not until May of 1941 that our first public acknowledgment was made of the fact that "optimum diet" for all of our people is not a visionary's dream but a known, reliable and *obtainable* element of health preparedness.

Up to now, medicine has not provided leadership in the field of nutrition. Instead, it has come principally from such special disciplines as agriculture, plant and animal husbandry and soil economics. Medicine's contribution has been confined very largely to technical studies on the etiology of nutritional disease, on the clinical criteria of malnutrition and on the relationship between vitamin deficiency and susceptibility to disease. National nutrition policy is to a considerable extent a function of agricultural policy. Our agricultural capacity makes it possible, if we plan wisely and act skillfully, to build a nation of people more fit, more vigorous, with more toughness of body and more fortitude of spirit than ever before was possible in the history of man.

On the international front, food superiority is as vital to victory as is air superiority. With increasing demands being made on America's food production facilities, because of the necessity for sharing our food with the Allied Nations, we are pushing aggressive policies of food conservation and are devoting the fullest energies of government to the application of the most modern principles of human nutrition. There is every evidence that our common enemy is exploiting the science of food to the utmost. America can afford to do no less.

The venereal diseases are and always have been a serious problem during war. Nationally, we have made great gains against these diseases since the passage of the Venereal Disease Control Act in 1938. The nation's 3,300 public venereal disease clinics last year gave more than eleven million treatments to an average

monthly load of 411,000 patients; laboratories performed more than 18 million serologic tests. Yet nearly 60,000 of the first million selectees tested were rejected or deferred from military duty because of venereal disease. Moreover, eighteen states and sixteen of our largest cities show rates of syphilis infection from 6 to 20 times higher than the 6 per thousand recorded for our most progressive states.

For the first time in the history of military medicine, a blood test for syphilis is now given to candidates for the United States Army under Selective Service procedure. This constitutes the most extensive case finding program ever undertaken on a national scale. But it is not enough merely to discover venereal infections. They must be treated; their sources must be eradicated, else we must admit that we, as a people, do not have what it takes to translate unimpeachable scientific knowledge into effective action.

The framework for effective action against these great saboteurs of our manpower is now in place through an official agreement between the War and Navy Departments, the several State and Territorial Health Departments and the Public Health Service on the essential measures to be taken in areas where armed forces or defense workers are newly concentrated. This agreement was further strengthened last year when a national policy regarding the suppression of prostitution was authoritatively declared through the passage by the Congress of the May Act. Although we have made a fair beginning, our venereal disease program must be expanded by at least two-thirds the present accomplishment if we are to safeguard our soldiers, our sailors, our industrial workers and our general population.

In an all-out war effort it is necessary to recruit not only healthy men and sound materials but also knowledge and new ideas. Newer methods of warfare require newer methods of defense. These must apply to military medicine and hygiene no less than to new bomb sights, stronger armor plate or improved tank construction. A fighting army is an extremely complicated organism. With present emphasis on mechanization, the streamlining process so essential for mobility and speed cannot extend beyond limits where such facilities as general supply and medical service are unable to conform.

The streamlining of military organization and tactics has almost overnight outmoded a great majority of traditional principles of medicomilitary administration. New research problems are posed in aviation medicine where flying machines have been developed with a performance requiring human adjustments beyond the possibilities of normal physiological economy. With American soldiers and sailors on every quarter of the globe, tropical and other diseases of peculiar geographic distribution take on added importance.

Recent advances in chemotherapy open up new possibilities in the treatment of war casualties and the control of surgical infections. The fundamental etiology of shock must be more thoroughly explored if we are to meet adequately the problems occasioned by its greatly increased incidence. The treatment of burns, the management of faciomaxillary injuries, vascular surgery, plastic surgery,

special problems of psychiatry and neurology all require new methods of approach which only research can explore and develop. Typhus fever, that notorious stalker of war and famine, must be kept in mind continually and every effort is being made to improve the vaccine which the Public Health Service developed in 1940.

Civilian defense gives new importance to continuing researches on the so-called children's diseases—whooping cough, mumps, measles and scarlet fever—in light of the potential necessity for shifting large numbers of children from their normal environments over into new and crowded quarters. The cutting off of sources of supply of such strategic drugs as quinine and opium requires that we seek for chemical substitutes. Who could possibly doubt the strategic advantage that would accrue to that nation which first perfects methods of control of the neuroses or of influenza?

What about fatigue? To what extent can present knowledge be applied to the control of fatigue in war industries, in military aviation and among soldiers and sailors in actual combat? What are the critical limits of exposure to new dusts, fumes, gases and other substances recently introduced into new war industries? What are the fundamental health and medical considerations which should underlie employment and placement of industrial workers and military personnel? How can night blindness in aviators be controlled?

What about malaria? Considerations of military expediency require that large concentrations of troops and new war industries be located in those sections of the country where malaria is the major public health problem. This demands the prompt initiation of control measures on the part of appropriate governmental agencies.

Bubonic plague, endemic in ground squirrels and other rodents of the West Coast, has spread eastward as far as North Dakota. There is real danger that the infection may spread to gophers on the midwestern prairies and thence to the domestic rat population of our thickly settled communities of the Mississippi Valley, Great Lakes area and Atlantic seaboard. As a Nation, we have no immunity against this disease; as yet we have no practicable immunizing agent; in the meantime, we must devote our full energies to the establishment of rodent-free zones around strategic seaports, military camps and industrial centers.

War conditions have completely disrupted our international services of epidemiological intelligence. Ships from foreign ports often arrive unannounced and, in many instances, under poor sanitary conditions. Expansion of air traffic to South America and Africa has greatly increased potential hazards of yellow fever and other tropical diseases. Though these circumstances have imposed serious burdens on our detention and quarantine facilities, this segment of our health front held in 1941, when not a single case of quarantinable disease was introduced into the United States from abroad.

What about the effects of our industrial program on the civilian economy of the Nation and on our supply of health and medical commodities? In stepping up our industrial machinery to its extraordinary war production, first, our indus-

trial facilities are being more widely distributed with less relative concentration in a few geographical areas than previously; second, the structure of industry itself is undergoing far reaching changes with a relatively larger output of durable goods, as compared with non-durables, than formerly; third, as greater portions of plant, equipment and raw materials are devoted to the manufacture of instruments of war, correspondingly less materials are available for commodities of civilian supply. Such shifts in industry are not made without creating the necessity for adjustments in all sectors of the national economy. America, for the first time in her history, is approaching a real war economy. Priorities, allocations, export control, freezing, rationing, conservation, substitution, price control—all these merely reflect the efforts of government to adjust our economy to the conditions imposed by this unparalleled war production program.

The allocation of materials necessary for the production of essential health and medical commodities is clearly in the public interest. The principle of necessity is an announced public policy. Every effort is being made by government to see that production of essential commodities is maintained on a level commensurate with demands of public health and safety. Such demands are made not only for our civilian population, but for our military forces and even for a large part of the needs of our Allies. While maintaining adequate supplies is a matter of policy, the concept of adequacy is subject to change, and as materials become scarcer and war needs become greater, technical and professional discrimination becomes more difficult in relation to those commodities that are in fact essential to health and safety.

Fundamentally, health preparedness is a function of trained people. The Nation's health defenses can be no stronger than the people who man them. America's professional personnel resources are relatively great. We have about 170,000 active practicing physicians, the majority of whom engage in private practice; we have about 70,000 dentists; we have from 12,000 to 15,000 veterinarians; we have a little more than 400,000 graduate nurses, considerably less than one-half of whom are active in nursing work; employed in our 6,300 registered hospitals are about 25,000 anesthetists, dietitians, laboratory and other technical personnel, exclusive of physicians and nurses; our more than 1,000 public health departments under full time medical direction employ a staff of about 600 additional physicians, about 10,000 public health nurses, and nearly 7,000 other professional personnel such as pharmacists, bacteriologists, sanitary engineers, statisticians and specialists in health education.

This enumeration does not take into account practical nurses, optometrists, osteopaths and technical personnel employed in industry in the preparation of drugs, biologic products and medical, surgical and hospital supplies. However, it does indicate the diversity of services and facilities which go to make up the Nation's health maintenance resources.

The job of maintaining a reasonable supply of trained people within these several categories, and of using them in situations to which their special training is best adapted, presents problems with implications extending into practically every phase of the war program.

These people must man the medical, sanitation and nursing services of our Army and Navy; they must staff our public health departments; they must participate professionally in the administration of Selective Service; they must provide medical and other protective services for our vast and increasing army of industrial workers; they must meet the demands imposed by boom towns, new shifts in population, new cantonments, new industrial centers, new housing developments; they must man our National, State and local organizations set up for Civilian Defense; they must double their efforts in the field of research, both fundamental and applied; they must be prepared to meet emergencies of epidemics or other disasters; they must continue to manufacture and dispense drugs and other essential health supplies. All of these make the health and medical job during these times enormous. They call for clear vision and sane public policy in respect to conservation and wise use of our professional personnel. They not only impinge on recruitment procedures of Army, Navy, Public Health Service and other governmental agencies, including Selective Service, but also affect personnel policies of civilian institutions and run squarly into many of the basic elements of medical and other higher education.

The establishment of the National Roster of Scientific and Specialized Personnel, the acceleration of medical and dental school courses, the expansion of facilities for the training of nurses, the extensive training program for auxiliary nursing personnel and for medical technicians, the Nation-wide scheme of first aid training, the adjustment of undergraduate curricula to the peculiar needs at hand, the development of specialty courses pertinent to the problems of military medicine, the organization of the Procurement and Assignment Service for Physicians, Dentists and Veterinarians—all these are a reflection of the efforts that are being made not only to maintain a continuing supply of trained people, but to use them in a manner best calculated to serve the overall health and medical needs of the Nation.

Thus far I have sketched some of the pressing problems brought before us by war. May we now turn for a moment and consider whether this experience may provide lessons for the future?

What about Selective Service? This procedure is providing an army of sound recruits; but it is also showing us a slag heap of young men rejected from military duty nearly as large as the group found suitable for service. Some of those rejected have physical defects which are relatively minor. Some of the defects are not remediable. Some of them are preventable. Most all of them could have been forestalled at some point short of actual crippling. This is a challenge which in the future will undoubtedly focus our attention on one of the major health and social problems we have not yet dared to meet—the problem of medical care.

What about venereal disease? The Nation-wide dragnet for syphilis and gonorrhea set up as a part of Selective Service procedure, coupled with the experiences of hundreds of local communities in attempting to control these diseases because of their special hazard to our military forces, provide lessons

which must be obvious to all of us. There must be reasons why, for example, in three southern states the incidence of syphilis infection in white registrants was more than fifteen times as great as in such states as Massachusetts, Rhode Island and Connecticut.

This war has lessons to teach, I think, about housing. What we are now doing for defense workers in connection with public and low cost housing will, in my judgment, have a real bearing on public policy during the period of post-war economic readjustment.

I predict that, before the war is over, we in America will witness a revival of respect for the perils of pestilence. With American troops located on the farthest outposts of the world, their return when peace has been restored will undoubtedly mean the introduction of new and dangerous communicable diseases.

This war brings into focus as never before the place of food as a fundamental segment in our public health structure. Hunger and sickness during World War I and immediately thereafter did more to deplete the vitality of Europe than all the weapons and instruments of battle. With the "scorched earth" policy applied to the Ukraine, the deliberate devastation by the Nazis and Japanese, the wholesale slaughter of live stock, the killing of millions of farm workers, and the destruction of vast stores of foods as an incident to actual combat, food supplies and means of food production will have become so depleted that, unless we plan wisely, the cessation of this war will be followed by famines far greater than in 1919. Control of food is the sharp weapon of the Axis powers. War needs require that we share our food with the United Nations; yet we have the opportunity to equalize the use of essential foods at home. Out of this war undoubtedly will come a concept of a real nutrition program: More production of the protective foods, greater attention to the diets of industrial workers, more of the practical administrative devices for bringing inadequate diets up to adequate levels, more school lunches, more cheap milk, more enrichment of white flour and bread, more fundamental research and the opening of new vistas as to the underlying place of nutrition in public health.

This war, thus far, has erased the possibilities of intellectual and cultural life for a large portion of the peoples of the world. The free flow of ideas across boundary lines between laboratories and universities has gradually been shut off. The conception of knowledge as an international responsibility has, of necessity, almost vanished; and now that we have lost it, we appreciate as never before the fundamental importance of international collaboration in matters pertaining to the science of health. We learn that such collaboration means a great deal more than merely protecting ourselves against disease from abroad. Moreover, we will learn that what happens to the people's health "inside Europe," "inside Asia," and "inside America" will be a determining factor in victory, and a major influence on the conditions of peace.

Because of the horrors of this war and man's inability to control them, science is under sharp attack today. People everywhere in this hour of intellectual confusion and moral chaos are questioning the social consequences of science, seeing

how its powerful tools can be used for man's enslavement and destruction. Our civilization has been so concerned with the transformation of man's environment that we are accused of having learned too little about man himself. It is said that we have felt it impractical to put as much emphasis on his capacity for life saving as on his ability to destroy. But this war teaches us that while science is being perverted into channels of *destruction,* scientific medicine and public health statesmanship can be and must be converted and directed to the *constructive* uses of freeing all peoples from the want of food, and the lack of health and from fear of premature death. This war gives science and medical leadership the opportunity of determining whether war's tragedies are to be followed by famine and pestilence and the disintegration of hope, without which a people perish.

Finally, this war impresses on us the new dignity to which every American is lifted by our tradition of democracy; a dignity that permits of achievement by impulsion rather than by compulsion; a dignity with a latent but driving force of discipline far greater than that of all the Gestapos in Continental Europe; a force which finds a place in the scheme of things for every person to share duty with opportunity. Medicine has a real stake in this kind of democracy.

After this war when cities and civilizations lie in ruins and the democratic impulse in men's hearts toward human brotherhood is smothered with hate, all the knowledge, strength, courage and statesmanship that American Medicine can muster will be needed for helping rebuild a shattered world. You who would uphold the traditions of medicine and share in its unique prestige must sense the aspiration of every thoughtful person throughout the world today—the attainment of man's humanity to man.

The Basic Science Laws

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The sixteen basic science, or healing arts, laws now in effect are answers to demands of the people for protection of their health and pocketbooks. Being state laws, they reflect a wide diversity of opinion in details and means of protection, though general education, proficiency in certain sciences, good moral character and maturity in age are chosen by all as the best guarantee of honesty and proficiency in the healing art. I apologize for any mistakes and oversights in this survey of the original laws, and for ignorance of subsequent changes in the laws, and in rulings of the boards. The purpose in this panoramic sketch is to emphasize the good that results from the laws, their diversity notwithstanding.

The framers of the basic science laws had to recognize that in all the states there were and are licensure laws of long standing which also had for their purpose the protection of public health. In most states, there was created by law a separate licensing board for each organized branch of the healing art. For this reason, the basic science laws state or imply that their requirements are additional qualifications for licensure to practice any healing art, and not in any way substitutes for existing licensing laws. The basic science laws are a concrete recognition of a science as well as of an art of healing. They were not the first such recognition, for the National Board of Medical Examiners, established in 1915, set up a clear cut division of examinations in the clinical and preclinical, or basic, science subjects before the first basic science law was passed in 1925. This must have helped to pave the way for the basic science laws, but, probably, the immediate impetus was the growing national scandals in certain licensure practices prior to 1925. In other words, the existing laws in some states were not able to cope with quackery extant more or less in all branches of the healing art. So, in June, 1925, Wisconsin enacted the first basic science law, and ten days later Connecticut legalized her State Board of Healing Arts for a similar purpose.

Since 1925, the growth of the laws has been constant, averaging almost one a year up to January, 1940, when Rhode Island passed her "Act creating and setting up basic requirements for admission to examining boards in the healing art." In 1927, three states, Nebraska, Minnesota and Washington, placed into effect basic science laws, followed by the Healing Arts Practice Act in 1928 by Congress for the District of Columbia, and the Basic Science Law of Arkansas in 1929. Almost four years elapsed before the next law was enacted, by Oregon, in February, 1933, to become effective January 1, 1934. Basic science laws were passed in Iowa in 1935, in Arizona in 1936, and in Colorado, Michigan and Oklahoma in 1937. South Dakota and Florida joined the group with basic science laws in 1939, and as stated above, Rhode Island, in 1940, brought the total to sixteen to date.

The common machinery of all the laws for determining the qualifications of candidates who wish to practice the healing art is:

(1) The creation of a Board of Examiners qualified to give examinations in certain basic sciences which underlie the practice of the healing art.

(2) Definition of the "healing art," "practicing the healing art," etc., and specification as to whom these apply.

(3) Provision for giving such examinations at stated times and places, or at the discretion of the Board, or other administrating officials, to qualified candidates.

(4) A mandatory clause requiring a certificate of proficiency in the basic sciences as a prerequisite for admission to examination by the candidates' own healing arts boards.

(5) Provision for exemption of certain classes of professions from the examinations; and for waiver of the examinations, in most states, so that candidates may, through previous qualification within the state or elsewhere, secure at the discretion of the board a certificate of proficiency without further examination.

(6) Provision for penalties for violation of the law by the candidate, the Basic Science Board, the Healing Arts Board, or any one connected with the administration of the law.

The variations in the provisions of the laws are numerous and wide. Perhaps these can be discussed best in groups as follows:

(1) Purpose—definition.
(2) The Boards; appointment, qualifications, term of office and compensation.
(3) General administration of the laws.
(4) The candidates: qualifications, application.
(5) Examinations; subjects, kinds, frequency, place and grades and failures.
(6) Exemptions, Waiver, Reciprocity.

As a prelude to the discussion of the above, the following tabulation from the basic science or healing arts laws, shows for each the date of enactment, subjects required, number, term and compensation of Board members, and provisions (+) or not (—) for reciprocity, or waivers.

In Table 1 it is seen that all the states give anatomy, physiology and pathology. Chemistry is not given by Wisconsin and Connecticut. Four states, Wisconsin, Connecticut, Washington and Oregon, do not give bacteriology. Hygiene is absent in the laws of eight states, and it is noteworthy that only two states, Wisconsin and Connecticut, require diagnosis as a basic science subject.

The number on the boards varies from three to seven, the term of office from three to six years, and the compensation from nothing to $20, though in all cases members are paid actual expenses incurred in the performance of their duties.

PURPOSE—DEFINITIONS

The purpose of the basic science laws, either implied or stated, is to protect the public health. In the District of Columbia the law, which includes the basic science law, is entitled: "An Act to regulate the practice of the healing art to

protect the public health in the District of Columbia." The Arkansas Basic Science Law is prefaced as: "An Act to establish a State Board of Examiners in the Basic Sciences . . . for the better protection of the public health in the State of Arkansas." Accompanying a copy of the law is a rather extended definition of it by Hon. Peter Deisch, Director of Medical Legislation, Arkansas Medical Society.

"It would seem to be reasonable even to a dull mind that the State needs the Basic Science Law, a law which requires that a person who handles a

TABLE 1.—ANALYSIS OF PROVISIONS OF BASIC SCIENCE LAWS

	Date enact.	Subjects: Anat. Physiol. Path.	Chem.	Bact.	Hyg.	Diag.	No. on Bd.	Term	Pay	Recip.
Wis.	1925	+	—	—	—	+	3	6 yrs.	$10+Exp.	+
Conn.	1925	+	—	—	+	+	3	6 yrs.	0+Exp.	+
Nebr.	1927	+	+	+	+	—	5	5 yrs.	$10+Exp.	+
Minn.	1927	+	+	+	+	—	5	6 yrs.	$15+Exp.	+
Wash.	1927	+	+	—	+	—	5	?	$10+Exp.	—
D.C.	1928	+	+	+	—	—	5	5 yrs.	?	+
Ark.	1929	+	+	+	—	—	5	6 yrs.	$10+Exp.	+
Ore.	1933	+	+	—	+	—	±	?	$10+Exp.	+
Iowa	1935	+	+	+	+	—	6	6 yrs.	$10+Exp.	+
Ariz.	1936	+	+	+	+	—	5	6 yrs.	$10+Exp.	—
Okla.	1937	+	+	+	—	—	7	5 yrs.	$10+Exp.	+
Colo.	1937	+	+	+	—	—	5	5 yrs.	$10+Exp.	+
Mich.	1937	+	+	+	+	—	5	6 yrs.	0+Exp.	+
So. D.	1939	+	+	+	—	—	5	3 yrs.	$10+Exp.	+
Fla.	1939	+	+	+	—	—	5	4 yrs.	All fees—10%	—
R. I.	1940	+	+	+	—	—	3	3 yrs.	$20 no Exp.	—

complicated machine like the human body would know as much about his job, as we expect of the auto mechanic when he undertakes to tinker with our cars. . . .

"If we require this elementary knowledge of the man at the garage who undertakes to repair our cars, or the engineer who runs a thing so crude as a train, simple machines, both, as compared with the delicate mechanism with its millions of parts which compose the machine which is our body, we should certainly expect as much of the doctor who undertakes to keep the human machine in repair.

"The Basic Science Law is after all but a minimum expression of basic intelligence on the part of the people of this state, and of all states where it is the law, an expression of their determination to protect themselves from incompetence and ignorance where their most precious possession, health, is concerned."

In Oregon, the law is "An Act to protect the public health by requiring knowledge of five certain fundamental sciences as a qualification for practicing any system or method of healing in this state . . ." In Michigan, Section I of the law states; "It is the intent and purpose of this act to protect the welfare and health of the people of this state, and to this end to require the passage of uniform

examinations in the basic sciences, as herein defined, as a condition of eligibility to practice the art of healing in this state."

All the laws, except those of Connecticut, Oregon and Washington, define specifically and more or less at length the "Healing Art," "Healing," "Practice of Healing," "License to Practice the Healing Art," etc. Wisconsin entitles it "treat the sick." A common example is that of Iowa which states: "The practice of the healing art shall mean holding one's self out as being able to diagnose, operate, or prescribe for any human disease, pain, injury, deformity or physical or mental condition and who shall offer or undertake, by any means or method, to diagnose, treat, operate or prescribe for any human disease, pain, injury, deformity or physical or mental condition." The laws of Minnesota and Arizona are notable for their more extended and detailed definitions of the healing art. They are much alike, and extend to such details as acceptance of fees for services, and the attachment of titles to names designed to indicate engagement in practice of healing. The laws of Connecticut, Oregon and Washington, instead of defining the healing art, name the branches of its practice as subject to the law. These are "medicine and surgery," "osteopathy," "chiropractic," and "naturopathy." Washington names also "osteopathy and surgery," and "drugless therapeutics," while Oregon provides for "any other system or method of healing that may be hereafter legalized in this state." Scattered among the laws are definitions of "a license;" "board;" "basic sciences;" "treat the sick;" etc.

BOARDS—QUALIFICATIONS, ETC.

There is a great variation in qualification of board members among the states. A list of specific requirements with the states that demand each one will indicate this:

(1) Members must be chosen from the faculties of the university or four-year colleges in Iowa, Washington, Oregon, Arizona, Michigan, Florida and Rhode Island, except that in Rhode Island one member must be a trained pathologist. In Michigan and Florida not more than one member can come from one university or college.

(2) No member shall be on the faculty of any school teaching the healing arts in Wisconsin, District of Columbia, Arkansas and Oregon.

(3) No member shall hold a degree in any branch of the healing arts in Connecticut, Iowa and Michigan.

(4) No member shall be engaged in the practice of the healing art in the District of Columbia, Arkansas and Oregon.

(5) Nebraska requires that no member shall be licensed to practice the healing art.

(6) A group of four states, Minnesota, Colorado, South Dakota and Oklahoma, have mixed boards, referred to, in some cases, as professional members and lay members. The lay members are chosen from the faculties of the universities and approved colleges for their knowledge of the basic sciences and non-association with the healing arts. There are two of these in each of Minnesota, Colorado and South Dakota, and four in Oklahoma. The professional members are doctors

of medicine, osteopathy and chiropractic, one each in each of the four states. In Minnesota these must have practiced five years prior to appointment. In South Dakota they must be residents and licensed to practice. In Colorado they must not be engaged in practice during their term of office. In Oklahoma a residency of one year prior to appointment is required.

Though each law creates a Board of Examiners in the Basic Sciences whose duty it is to determine and certify the eligibility of candidates to take an examination for license to practice the healing art, the manner of appointment and qualification of the board members varies greatly. In six states, Connecticut, Oklahoma, Washington, Colorado, South Dakota and Florida, the board is appointed by the governor. In Wisconsin, Minnesota, Iowa and Michigan, the governor appoints with the advice and consent of the senate. In Arkansas, appointment is by the governor and superintendent of public instruction, and in Rhode Island by the director of health by and with the advice of the governor. In Nebraska, appointment is by the department of health; in Oregon, by the state board of higher education; in Arizona, by the board of regents of the University of Arizona; and in the District of Columbia by a board of commissioners on licensure made up of the United States Commissioner on Education, the United States District Attorney for the District of Columbia, the superintendent of schools of the District of Columbia, and the district health officer ex officio. In the case of Oregon, it seems more correct to say that the State Board of Higher Education is the Basic Science board, which, in turn, appoints examiners in the basic sciences from the faculties of the university or colleges accredited by the Oregon State system of higher education. Thus, the examinations are a part of the general educational system in Oregon. Arkansas, Arizona and the District of Columbia also approach the same idea in the authority given the Superintendent of Public Instruction, the Board of Regents of the University of Arizona, and the United States Commissioner on Education, respectively.

ADMINISTRATION

Except in Oregon, where the Board of Education is authorized to conduct examinations in the basic sciences, all the state laws require the established Basic Science Boards to meet, organize by electing officers, keep records, and to make such rules and regulations necessary to carry out their duties under the law. While the conduct and grading of examinations is the main function of the boards, they generally also must designate the time and place of the examinations, except in a few cases fixed by law, and check on the qualifications of the candidates as shown on their applications.

Most states authorize the adoption of a seal by the board, and many require members to take an oath of office, and in some states, as Michigan, Florida and Oklahoma, the secretary or treasurer must give bond for safety of the funds he handles.

While the indirect responsibility of the boards in the protection of public health is implied in their duties as examiners, all boards must report cases of infraction to proper authorities. In Connecticut, the board must act as a griev-

ance committee to hear complaints against persons practicing the healing art and report same to the attorney general. In Minnesota, the board is empowered to administer oaths and take testimony. Most boards cannot escape a certain amount of judiciary function because of the very nature of their jobs.

THE CANDIDATES

In the qualifications of candidates for the basic science examinations, no age minima are specified in Wisconsin, Michigan, Washington, Connecticut and Florida. In Nebraska, it is 17 years; in Oklahoma, 19 years, and in all the other states it is a 21 year minimum. Moral character is specified in every law except that of Washington, which merely demands credentials prescribed by law presumably found elsewhere.

All of the laws require high school graduation or its equivalent. In addition, three of the laws require professional training—two years in the District of Columbia, and in Rhode Island, and an unstated time in Connecticut. Rhode Island also requires one year of pre-professional training before professional. Four states, Oklahoma, South Dakota, Florida and Rhode Island, require U. S. citizenship of their candidates. In addition, of course, each candidate must pay a fee and successfully pass the basic science examination in order to qualify for a certificate.

EXAMINATIONS

Many diverse requirements in the manner, time and place, etc., of the examinations are found in the laws. The Wisconsin, Minnesota, Colorado, Michigan, South Dakota, and Rhode Island laws state that the examinations may be both written and by demonstration at the discretion of the board. All the rest specify written examinations. The District of Columbia, Oklahoma, and Florida specify English as the medium. Oklahoma requires ten questions in each examination.

Connecticut, Arizona and Iowa specify four examinations each year; in Iowa on the second Tuesday of January, April, July and October; in Arizona on the third Tuesday of December, March, June and September at the University of Arizona. Oklahoma, Washington, Michigan, South Dakota and Florida each specify at least two examinations a year, those in Florida to be spaced about six months apart. In all the other states the time, place and frequency is generally left to the discretion of the board or other officials. A further stipulation in most of the laws is that the candidates' papers shall be identified only by number in the hands of the board, and in no case is the candidate required to disclose to the board the school from which he came, or the branch of the healing art which he aspires to practice.

Ten of the states require a passing grade of 75% in each subject as qualification for a certificate. But no two states are alike in provision for reexaminations of failures. In Nebraska, Arkansas, Colorado, Florida and Rhode Island one subject failures may be reexamined within the year, with repayment of the fee. Such failures retake the failed subject only, except in Arkansas where one subject failures demand reexamination in all subjects. Minnesota, Arizona and

South Dakota permit reexamination of two subject failures within the year with no further fee, and in the failed subjects only. Two subject failures in Wisconsin, Nebraska, Arkansas, Colorado, Michigan, Florida and Rhode Island are considered complete failures, and the candidate generally must show proof of further study before reexamination. In Nebraska and Arkansas such failures must wait one year before reexamination, while Michigan permits only three examinations in three years. Three failed subjects constitutes complete failure in Minnesota, Arizona and South Dakota, which means complete reexamination, but no time is mentioned, and South Dakota requires no further fee.

Four states require 75% as an average passing grade in the basic science subjects with a minimum of 70% in Oregon, Iowa and Washington, and 65% in Oklahoma in any subject or subjects. In Oklahoma, if the grade in only one subject falls below 65% and all the others are 75% or better, the applicant may take the failed subject at the next ensuing examination. In Iowa, if the applicant "fails to attain the required grade in one or more subjects," he may be reexamined in such subject or subjects within a year without further application or fee. Iowa has a further provision for waiver of examination in a part or all of the basic science subjects if the applicant presents a certificate from an approved college or university showing that he has met the grade requirements (75%) in these subjects.*

EXEMPTIONS—WAIVER—RECIPROCITY

Five states, Wisconsin, Nebraska, Arkansas, Florida and Rhode Island require a certificate of proficiency in the basic sciences before admission to examination in or practice of the healing art without mentioning by name any of its branches. All other states not only require the certificate of proficiency, but also name branches of the healing art concerned, including variously; medicine: medicine and surgery; osteopathy: osteopathy and surgery; chiropractic; homoeopathy, eclectic medicine and naturopathy. On the negative side nearly all of the laws exempt certain professions from basic science examination. In the aggregate, twenty-five professions are named as exempt, South Dakota topping the list with 17, while Minnesota names 16, Michigan 14, Iowa, Colorado and Rhode Island each 11, and Arkansas 10. Nursing, most frequently named, is specified in 13 of the laws; optometry, in 12; dentistry, in 11; chiropody, in 10; pharmacy and Christian Science each in 8; midwifery, barbers and religious tenets each 6; Army and Navy surgeons and cosmeticians each 5. Other professions mentioned are public health officers, orthopedists, consultants, dental hygienists, masseurs, first aid, embalmers, baths, Swedish movement and hydrotherapy.

Another exemption in practically all of the laws applies to licensed practitioners of the healing art at the time the law became effective. Their licenses are not affected by the law, but since they have passed the basic sciences in their examinations before their licensing boards, some states provide that such practitioners may secure the basic science certificate on this basis. Florida provides that

*I understand that this has been revised.

the licensing boards *shall* accept the basic science examinations instead of examining in these sciences again, while in Arkansas, Iowa, South Dakota, Oklahoma, Washington and Colorado, the licensing boards *may* accept the basic science examinations in lieu of reexamining these subjects. In Washington, any or all subjects with grades of 75% may be exempted from reexamination by the licensing board. Most of the laws have no provision in this matter.

A vexing problem to many basic science boards arises in requests for the basic science certificate by waiver of the examination on the basis of having passed the basic sciences before a basic science board, or a licensing board of another state. As most states with basic science laws already had provisions in their uniform licensure laws for reciprocal relations in the matter of licensure, it must have seemed logical to many to provide for waiver also, under stated conditions, of the examination in the basic sciences as a necessary step toward licensure. All but three of the basic science laws, viz., those of Arizona, Washington and Florida, have such provisions, subject usually to the discretion of the basic science boards.

But the process is not as simple as it sounds. There have been noted in the preceding pages a great lack of uniformity in the basic science laws, e.g., in subjects required; in method of examination—written or oral; in the personnel and qualifications of the boards; in passing grades and reexamination, and many other details. At the same time, the provisions for waiver generally state that such waiver may be granted when in the discretion of the board the standards of the other examining board are at least equal to its own. Let it be said that these and a thousand other technical difficulties can be appreciated fully by the boards themselves. Acceptance of the National Board of Medical Examiners also involves difficulties. While some states, notably Connecticut, Minnesota and Oklahoma, provide for acceptance of National Board examinations in the basic sciences, others find technical points in their laws which bring into question the legality of such acceptance.

It would seem that the really pertinent question is, what is the purpose of waiver or reciprocity provisions anyway? Undoubtedly, the intention in the minds of legislators was to provide means whereby bona fide practitioners of the healing art, or even candidates for such practice who had passed the basic science subjects in one state could be certified or licensed in another state without going through the tedium of being examined again. Undoubtedly, the intention was not to encourage "shoppers around," who by piecemeal examination here and there might contrive to get together enough grades to secure a certificate and license in the state where they wished to practice.

One can appreciate the great caution on the part of all boards, and the thumbs down policy of others, on the waiver question, for in the diverse provisions in the laws the loopholes for triflers are many. After all, the basic science boards share with the licensing boards a position of serious responsibility to the public. While due caution in the matter of waiver may entail some inconvenience for some bona fide candidates, this is far outweighed by the common good sought. The best evidence in support of the basic science laws is that the boards are generally regarded as functioning well, and that other states are trying to get such laws.

The Predictive Value of the Medical Scholastic Aptitude Test at Woman's Medical College

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This study attempts to show the relationship between medical aptitude scores and medical grades for all the matriculants at Woman's Medical College who have taken the aptitude test. Although the College has made frequent use of the scores, no previous survey for critical evaluation has been completed. Such a survey seems especially essential because of the unique nature of the student group —the only exclusively women's medical student body in the country.

Table 1 shows how well the test predicts first year accomplishment for all students having percentile scores. Since aptitude test results were not reported on a percentile basis prior to the 1931 test, and since academic ratings for the 1941 matriculants will not be final until after the Fall, 1942, examinations, the table is restricted to the matriculants of 1931-1940 inclusive. Transfers from other schools are excluded.

TABLE 1.—ACCOMPLISHMENT OF FIRST YEAR STUDENTS

Aptitude Test Score	No.	Clear Standing in Class (Quarters) I	II	III	IV	Encumbered	Repeaters	Dropped	Incomplete	Total
91-100	38	21	10	7	0	2	1	0	2	43
81- 90	34	16	10	7	1	4	1	0	3	42
71- 80	33	15	13	4	1	9	1	2	2	47
61- 70	27	7	10	6	4	8	1	5	4	45
51- 60	23	3	13	5	2	9	5	3	2	42
41- 50	13	2	3	8	0	6	2	7	2	30
31- 40	14	2	4	4	4	1	2	6	3	26
21- 30	5	1	1	1	2	6	4	2	1	18
11- 20	5	1	3	1	0	1	0	1	0	7
1- 10	2	1	0	0	1	1	1	1	0	5
Total	194	69	67	43	15	47	18	27	19	305
Median	73.0	83.0	70.0	65.0	52.0	60.0	48.5	44.0	65.0	67.0
Mean	69.2	77.8	67.7	64.6	50.1	58.2	46.8	46.4	62.6	63.8

In Table 1, "Clear" indicates a satisfactory passing average; "Encumbered" a record including conditions or failures which were later removed; "Repeaters" and "Dropped" are self-explanatory, and "Incomplete" indicates a record never completed because of withdrawal due to health, finances, etc.

The median scores of each of the divisions: clear, 73.0; encumbered, 60.0; repeaters, 48.5; and dropped, 44.0 show wide variations and are to be expected if the measuring instrument differentiates students according to scholastic ability. Note in particular, the difference between the medians of the best group, clear, 73.0; and the lowest group, dropped, 44.0.

Within the clear group, standing by quarters in the class is also significant. Those in the first or highest quarter have a median aptitude score of 83.0; in the second quarter, 70.0; in the third quarter, 65.0 and in the fourth quarter, 52.0.

It is observed from Table 1 that of the eighty-five students with an aptitude score over 80, none were dropped, only two were required to repeat and only one ranked in the lowest quarter of the clear group.

It is also observed, and not to the credit of the test, that of the five students in the lowest decile, two obtained clear records, one of these placing in the first quarter of the class. Of the seven students in the second lowest decile, the surprising total of four finished the first year in the upper half of the class.

Those in the third decile were definitely poor risks. Of the eighteen students in this group, only five completed the year with clear records and three of these ranked in the lower half of the class. Six of the eighteen had conditions or failures, four had to repeat the year and two were dropped. The fourth and fifth decile groups also ranked poorly in first year academic accomplishment. The sixth and seventh deciles show some improvement and the three highest groups are quite satisfactory.

There is no significance in the distribution of the incomplete cases, since so many reasons unrelated to performance accounted for their temporary or permanent withdrawal from the College.

It is interesting to speculate from table 1 what might have happened if the eighty-six students having aptitude scores below the median had been rejected. If they had, the College would have eliminated, theoretically, the following from the first year:

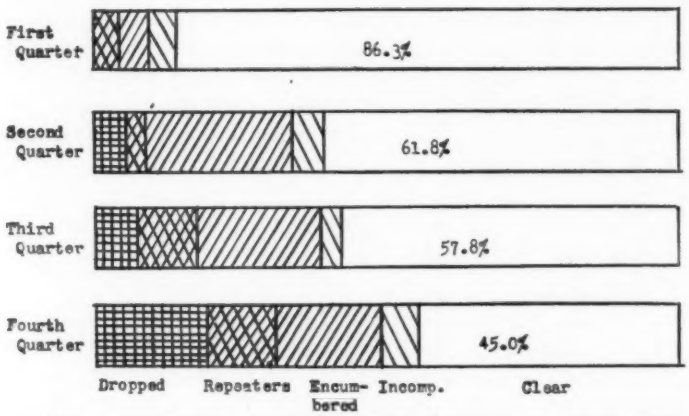
10.1% of students "Clear" and in the first quarter of the class
16.4% of students "Clear" and in the second quarter of the class
32.6% of students "Clear" and in the third quarter of the class
46.7% of students "Clear" and in the fourth quarter of the class
31.9% of students having conditions or failures
50.0% of students having to repeat
63.0% of students dropped

This group of eighty-six students forms only 28.2 per cent of the entire number studied in Table 1 and yet by rejecting this group, 63.0 per cent, or well over half of the "dropped" group, could (hypothetically) have been eliminated. At the same time, however, varying percentages of the better groups would also have been eliminated. It seems impossible for selective devices to avoid this overlapping.

Because so few applicants with low aptitude scores are selected, it is possibly advantageous to study first year accomplishment on the basis of relative standing in the class on the aptitude test. For this purpose each of the first year matriculants who took the aptitude test was rated in the appropriate quarter with respect to other members of the same matriculating class. This divides the cases into the same type groups for both scholastic aptitude test rating and academic standing at the end of the first year.

This method of classification permits the addition of fifty-one students who matriculated in 1929 and 1930 and who did not have percentile scores. Furthermore, it permits comparisons on the basis of relative standing within a class, and low members of each matriculating group compete regardless of the range of aptitude scores for that particular year.

Graph 1 expresses in an easily visualized form, the percentages of "clear," "incomplete," "encumbered," "repeaters" and "dropped" by quarter standing on the aptitude test. The 356 students who matriculated at Woman's Medical College between 1929 and 1940 and who have aptitude scores are represented. This graph summarizes very well the effectiveness of the aptitude test in predicting first year accomplishment.



GRAPH 1.—FIRST YEAR ACCOMPLISHMENT ACCORDING TO SCHOLASTIC APTITUDE STANDING BY QUARTERS

One defect in this arrangement of aptitude scores by quarters is that it has little value for medical school admissions officers who need actual scores and not comparative scores on which to base selection. If all applications to be considered for any one class could be assembled and the best of the lot chosen, a percentile scoring scale would not be necessary. Since this is not possible, the purpose of the study is to ascertain an approximate critical score for the admissions committee at Woman's Medical College.

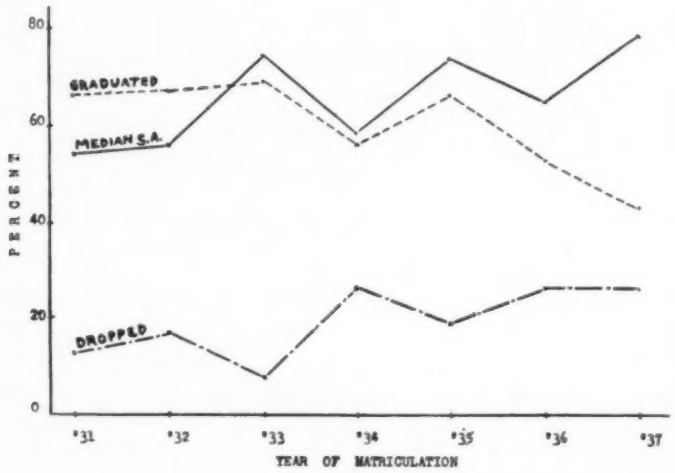
The median aptitude scores for the graduating classes show wide variation from a low of 49.0 for the class of 1936 to a high of 80.0 for the class of the following year. It is a well known fact that some classes appear "brighter" than others. On the basis of this rather objective measure a reason for this impression becomes evident.

Graph 2 shows the relationship between the caliber of the group as evidenced by the median aptitude score at matriculation and the numbers succeeding or failing in their studies.

For all matriculating groups, except that of 1937, the curves for the median aptitude score of the class and the percentage graduating show practically the same fluctuations: as the aptitude score level increases a greater proportion graduate and vice versa. The failure of the matriculating class of 1937 to conform is partially due to the fact that only those students who graduated in four years could be included in the percentage graduated. Those retarded for any reason whatsoever are not represented. Consequently, in a year or more the curve at 1936 will probably rise very slightly as students whose courses have been interrupted or delayed for more than one year complete their work for the degree.

GRAPH 2.—THE MEDIAN APTITUDE SCORE AS RELATED TO ACADEMIC MORTALITY

Yr. of Matric.	No.	Median S.A.	% Grad.	% Dropped
1931	39	54.0	66.7	12.8
1932	37	56.0	67.6	16.2
1933	26	74.5	69.2	7.7
1934	34	58.0	55.9	26.5
1935	27	74.0	66.7	18.5
1936	30	65.0	53.3	26.7
1937	30	78.0	43.3	26.7



While the curves for the median aptitude score and the percentage graduated tend to fluctuate in the same way, the curve for the percentage dropped fluctuates in almost the same degree, but in the opposite direction. In other words, as the aptitude score of the class increases, the likelihood of graduation increases and of being dropped decreases. For the groups matriculating between 1932 and 1936 inclusive, the dropped curve is almost the mirrored reverse of the median aptitude curve. There are, then, good and poor classes, and the aptitude score is an excellent criterion for determining this.

A study of individual students shows that the test predicts group tendencies better than individual standing. Comparisons of individuals on the aptitude score factor alone and especially at the middle of the percentile scale are shown to be unwarranted. In most cases, however, where there is a great disparity between aptitude score and grades, it can be accounted for by contributing personal factors. Chief among the atypical cases are students of foreign nationality or race.

CONCLUSIONS

1. The results of this study indicate that the medical scholastic aptitude test has predictive value at the Woman's Medical College. To a great extent achievement in the College varies directly with the aptitude score.

2. Fifty appears to be the critical score with many casualties below and only a small proportion above this level. When the two highest deciles are reached, failure is almost precluded. Since it is not practical to set 80 as the critical score, 50 seems to be a reasonable choice.

3. It would be wisest, therefore, to refuse admission to most of those with aptitude scores below 50. Although by the adoption of this policy a few good students may be lost, this is perhaps better than admitting great numbers of poor risks.

4. Because of a number of failures occurring in the 50-80 percentile group, a more careful selection based on some other measures, whatever they may be, appears necessary in that range.

5. It is clear that an extreme view of the test should be avoided. It is obvious that it is not worthless; every section of this study demonstrates its merits as a predictive measure. On the other hand, too much should not be expected. With the greatest care in the consideration of all entrance credentials, an admissions committee, because of the ultimate uncertainty of personality, cannot forecast all applicants as good or poor risks. Therefore, all admissions factors should be weighed carefully with the aptitude score one of the most important criteria.

Medical Education and the Distribution of Physicians and Hospitals in the South*

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The South has had its share of eminent physicians,[1] medical schools—starting at Transylvania University in 1799—and historic hospitals, but the growth in population has been greater than that of the medical services. During the present century, although the quality of medical education and medical service in the South has risen, the number of graduates and the quantity of medical service have declined. The effect of this curtailment, which has not been limited to the South, did not become significant until recent years, as the ratio of physicians to population in the U.S.A. decreased only from 1:569 (including all healers) in 1850 to 1:670 in 1906, or 18 per cent. In the next 19 years, however, the ratio fell approximately in the same degree as in the preceding 56 years.[2] In 1941, the Southern physician-population ratio was 69 per cent lower than the Northern percentage.[3] At present, because the proportion of physicians volunteering for military service is higher in the South than in the North,[4] the discrepancy is much greater (Footnote A).

Several factors are responsible for this situation. The results of financial returns, living and social conditions and scattered population have been discussed elsewhere,[3] but the effect of medical education and hospital facilities needs to be stressed. Some changes may be beneficial.

MEDICAL EDUCATION:—Local medical schools have an important influence on the number of graduates who practice in the community and state. For the nation as a whole, about 50 per cent of the graduates locate in the same state in which their medical school is situated, and about 25 per cent in the same city,[5] but a much higher percentage of the graduates of the Southern schools locate in their own state. For example, 85 per cent of the graduates of the University of Tennessee College of Medicine of the past ten years practice in Tennessee. Of the 750 recent graduates who settled in the South in 1936, 625 or 80 per cent, were from Southern schools.[6] The effect of local medical schools on the number of physicians in a state is illustrated by the fact that the schools of the five Southern states with highest ratio of doctors graduated from 88 to 188 physicians in 1936. Florida must be excepted, because, although it does not have any medical schools, its economic and climatic factors make medical practice there very attractive. Four Southern states are in the lowest ratio group, with only one physician to 1,284 or more people. North Carolina soon will move out of this group as the

*From the Department of Pediatrics, Duke University School of Medicine and Duke Hospital, Durham, N. C., with the greatly appreciated assistance of Miss Judith Farrar, Librarian of Duke Hospital. Many of the data were abstracted from Davison, W. C.: A Survey of Medical Education in the South, Address at the Inauguration of Oliver C. Carmichael as Chancellor of Vanderbilt University, and a Symposium on Higher Education in the South, Nashville, Tenn., Vanderbilt University, Feb. 4, 1938.

Duke University four year school has just commenced to graduate physicians, and the first Seniors of the Bowman Gray School of Medicine of Wake Forest College will finish in 1943. However, South Carolina has only 44 graduates annually, and Alabama and Mississippi have no four-year schools.

Of the 75 Southern medical schools at which students were trained from time to time during the past century, only sixteen are extant, and three of them do not have a four year curriculum.[1] Because of the closing of these schools, many Southern students, who must now attend medical schools in the North, remain there.

Another factor in the paucity of Southern physicians is that the South is largely rural and the only way to get country doctors is to train country students,[7] because students tend to return to the environment in which they were raised.[6] Unfortunately, relatively few rural students study medicine, largely due to the high cost of medical education, the lower income of country people, and the greater difficulty of borrowing money in rural areas. Also it probably is true that because of the high cost of medical education and the inevitable economic necessity of charging high fees to cover it, some young doctors are not willing to consider the physical hardships and the smaller income of an ordinary country practice.[7] It is said that "It is costing society from $5,000 to $10,000 to produce each of its doctors, and the doctors an equal amount more."[7] However, the establishment of some lower grade schools at which a cheaper medical education can be obtained by youths who might migrate back to the country because they were too ill-equipped to compete with city physicians, is based on the erroneous theory that poor medical care is better than nothing. It was abandoned after a trial in Russia. Badly trained physicians are more dangerous than none at all (Footnote B).

Loan funds for medical students would overcome the difficulty of expense better than would cheaper medical education. Loan funds for students from rural communities also would provide many more needed country physicians. Such a plan would enable many deserving country students to become physicians without involving so large an investment as scholarships necessitate (Footnote C). Although the medical students at Duke University pay only 28 cents of every dollar of medical school expenses (only 9.3 cents if the cost of the teaching hospital is included), 49 per cent of them are unable to study medicine without financial assistance.[8] An annual loan fund of $12,000 has enabled every worthy Duke student to continue his or her medical education. The recent loan funds established by the W. K. Kellogg Foundation and the U. S. Office of Education of the Federal Security Agency will help this situation.

Another cause for the unequal distribution of physicians is the unfamiliarity of most medical teachers with the problems of rural practice. Instructors should constantly keep in mind the job their students must do, and facilities they will or will not have.[9] In addition to the need for instruction in the "practical" aspects of medicine, the advantages of research in stimulating staff and students cannot be overemphasized. Obviously, students cannot be transformed into Bantings, Minots and Whipples, but the "spirit of inquiry" is as necessary in locating and

treating the cause of fever in an infant in a rural home without laboratory aid, as it is in conceiving of insulin (Footnote D). Southern accomplishments in research are increasing constantly, e.g., pellagra, sprue, malaria, anemia, nephritis, fungus, parasitic and virus infections, etc., but more help from the Foundations to the Southern medical schools would produce inestimable results. A beginning has been made, as Dr. Flexner stated,[10] but all around us are innumerable problems, the solution of which would help the South, and in addition the attack on the problem itself would stimulate medical education, teachers and students.

"He who cures a disease may be the most skillful, but he who prevents it is the safest physician" (Thomas Fuller). Three-fourths of the 240,000 annual deaths among American children are preventable, and the number of premature births, stillbirths, birth injuries and maternal deaths can be reduced greatly if pediatrics and obstetrics are taught properly. Medical schools, both North and South, should fulfill Dr. Sedgwick's dictum: "The medical school which fails today to provide liberal instruction in preventive medicine, vital statistics, sanitary science, public health laboratory methods, epidemiology, preventive sanitation—such as the sanitation of water supplies and other branches of municipal sanitation—preventive hygiene—such as mental, social, personal and dental hygiene—and in public health education and public health administration—that medical school is sending out its graduates unprepared for some of the most serious problems they will have to face in the immediate future."[11] The physician of the future should not only be in sympathy with the modern health movement, but also should be the most potent influence in the community for the promotion of public health.[12] "All our curricula should be permeated with the idea of preventive medicine."[13] Adequate training in nutrition will play an increasingly important part in preventive medicine, especially in the South. Tropical medicine also must be emphasized not only during the war, but also afterward because many tropical diseases may be imported into this country by returning troops.[14]

The need for more provision for postgraduate study is very acute, not only in the South but everywhere. There are few clinics to which a physician may go, after he has been in practice several years, to obtain the additional training which he has found he needs. Internships and residencies supply this need for recent graduates, who should be regarded as being, in every sense, postgraduate students, and their maintenance or stipend considered as fellowships.[15] Shorter internships also may be advantageous for the older physicians[16] (Footnote E).

Hospital Facilities.—The ratio of beds per population in the South is only one-third that of the urban North, and many of the Southern hospitals are small. The facilities for special hospital care also are insufficient, as shown by the pediatric situation. Only 44 interns are exclusively assigned to pediatrics in 194 of the larger Southern general hospitals, and 22 of them have no pediatric interns. Only two of the ten children's hospitals have interns exclusively assigned to pediatrics.[17]

Hospitals also suffer from maldistribution; they tend to stay in towns. In 1924, the cities in North and South Carolina had 21 per cent of the population

and 48 per cent of the hospital beds.[18] The situation is improving, and by 1937 these towns had 23 per cent of the population and only 44 per cent of the hospital beds, due largely to the aid of the Duke Endowment[2] (Footnote F).

An illustration of the effect of hospitals on rural medical service is furnished by the Province of Saskatchewan which is three times larger than Georgia, and has many areas of 1,000 to 1,500 square miles with only one or two physicians. By providing medical facilities, and subsidizing hospitals of from 10 to 30 beds, to which patients can be brought, one physician is able to provide more medical service in four or five hours than he previously could in four or five days when he had to travel long distances, and to work unassisted.[19] In rural areas, in which the towns are too small to support an individual hospital or too scattered to maintain a combined hospital, a "medical station" with a nurse and a technician, and affiliated with a medical center would increase the physician's effectiveness and improve rural medical service.[20]

Recognition by the public of its medical needs is essential if physicians are to practice and a hospital is to survive in a community. That the public is awakening to the value of hospital service is indicated by the increase in available hospital beds and more especially by the rise in bed occupancy in the South.[21] The education of the public also is reflected in the increase in the number of hospital deliveries. Curtailment of its medical facilities by a physician's death or moving makes a town conscious of its needs, as is evidenced by the numerous letters which every medical school receives, requesting that a doctor locate in the vicinity. An increase in hospital facilities likewise is an educational factor in arousing public interest, e.g., in 1929, when Durham had 290 hospital beds, the average daily hospital census of Durham patients was 172. In 1938, when the number of hospital beds had increased to 705, the daily Durham patient census rose to 276, a 60 per cent increase, in addition to a daily census of 273 patients from 98 other North Carolina counties and 21 other states. The spread of voluntary hospital insurance associations is increasing the utilization of hospital beds.

Not only do local hospitals increase the supply of physicians but the ability of the local physicians or surgeons affects the growth of hospitals and medical service in that area. For example, Rochester, Minnesota, became a medical center through the competence of Dr. William J. Mayo and Dr. Charles H. Mayo.

SUMMARY:—The South needs nearly twice as many physicians and three times as many hospitals.

FOOTNOTES

A.—In addition to the discrepancy between the concentration of physicians in the North and South, there is marked intrastate maldistribution in the individual Southern states. The ratio of physicians in 1927 in North Carolina ranged from one physician to 430 people in an urban county to 1:3,776 in the country; only four counties approached the national average of 1:794. In 1925, five counties had more than 3,000 people per physician, and by 1934, this number had increased to nine.[22] In 1941, the physician-population ratio in one county was 1:5164.[23] In 64 counties with no towns in excess of 3,000 population, the ratio was one physician to every 1,748 people in 1925; the supply decreased 4.5 per cent during the next two years, as compared with a decrease of 3.2 per cent for the 36 more urban counties. Forty-three per cent of the population is located in these 64 rural counties, but only 30 per cent of the physicians.[24]

The distribution of physicians in South Carolina is similar, ranging in 1927 from one physician to 826 people in an urban county to 1:4,512 in a rural area. None of the counties equalled the national average of 1:794; eight had more than 3,000 people per physician. In the urban centers there was one recent graduate to every 4,798 people, while in the rural areas the ratio was 1:14,462. The average age of the rural physicians in both North and South Carolina was 48.2 years in contrast to the city average of 45.3 years.[21 24]

The same situation exists in Tennessee: of the 2,989 physicians, 1,855 practice in the four cities with one doctor per 500 people, and 700 are in villages with a ratio of 1:1,617.[6]

In Mississippi, the number of physicians and hospital beds in proportion to the population is one-half of the national average.[35] The population per physician has risen from 803 in 1890 to 1,358 in 1938, while the national figure changed only from 629 to 762 during this period. Sixteen and nine tenths per cent of the Mississippi physicians have reached the age of 65 years, in contrast to 13.3 per cent for the country at large.[36] In 1937, 15.5 per cent of the deaths were in patients without medical care. However, as elsewhere in the South, the number of hospital beds is steadily increasing and the bed occupancy is rising even more rapidly, indicating the awakening of the public and medical profession to the value of hospital service.

The figures include both White and Negro physicians, but if the data are separated, the same conclusions apply to the maldistribution of Negro physicians to Negro population. The ten Southern states contain 65 per cent of the Negro population, but only 34 per cent of the Negro physicians. In 1932, the average ratio of Negro physicians to Negro populations in the ten Southern states was 1:5,122, but it varied from 1:14,221 in Mississippi to 1:1,551 in Tennessee. In the ten Northern states with more than 30,000 Negroes each, the average ratio was 1:1,571; from 1:2,552 in Pennsylvania to 1:991 in Illinois.[37]

B.—The following suggested solution of this problem is open to question: "Of course, the expensiveness of medical education now is chiefly due to some of the policies which we are urging or requiring. Among these are: (1) the emphasis on the importance of full-time professor, usually in a very strict sense; (2) the emphasis on research rather than on teaching; (3) the selection of teachers on the basis of research rather than teaching; (4) the urging of the teaching and research hospital. Suppose we returned to the policy of education for its own ends—to the position where the students got this impression: Your business here is to equip yourselves for the practice of medicine, on the basis of existing knowledge; suppose, then, we picked our men carefully on the basis of fitness and quickly got rid of those who showed we had made a mistake in their selection; suppose, then, we gave them three academic years of nine months of sound education in two and one-half calendar years; and then suppose we put them in good apprenticeships in hospitals for at least eighteen months, where they would learn the practice of caring for the sick by actually doing it under experienced men. Can any one doubt that we would make well-prepared doctors in that way? That is about the way nearly all the best physicians in this country have been educated. The question is whether we shall turn out well grounded, soundly trained physicians, or, for the most part, weak imitations of Ph.D.'s."[7]

C.—The Commonwealth Fund Plan provided $1,000 annually for four years to four students in each entering class at Vanderbilt, Tulane and Tufts on their agreement to practice for at least three years in a rural area after the completion of their two years internships. $500 for office equipment also was furnished.

The Albany Medical College has developed the following successful plan to provide physicians for rural communities: 1. By giving preference in the selection of medical students to those whose affiliations are in rural districts. 2. By primarily training students for general practice, and properly fitting them at moderate cost for such work. 3. By providing its graduates and other hospital interns with data concerning opportunities and locations where doctors are needed. 4. By cooperating with graduates and other physicians in the large district served by the medical college, giving them an opportunity to take graduate work, review and advanced courses, either formally or informally, as well as special work in all departments of the medical school. 5. By suitable publicity, informing rural communities of the advantage of employing their local doctor who can care adequately for more than 90 per cent of their ills, and whose cooperation and interest is of the greatest importance in the care of the remaining 10 per cent of their difficulties.[38]

D.—Medical education everywhere needs "the spirit of inquiry—the spirit and habit of scientific curiosity. The success of the teacher is largely dependent upon his ability to incite and foster this spirit of inquiry, and his function is that of a piloting agent who offers the opportunity for the student to learn, for unless the latter soon acquires this questioning habit of mind, he will go through the course of instruction in a somewhat blind way, learning ultimately tricks of medical diagnosis and therapy, but without essential understanding of the true function of a student of medicine."[39] Every medical student should adopt Manson's motto of "Never take anything for granted."[40] Too much teaching in too many subjects also should be avoided, but this teaching must be maintained at the highest possible level.[39] The medical curriculum should be liberalized, and the students allowed more freedom in planning their courses.[41] They should be subjected to influences which arouse their "spirit of inquiry" and not be forced into day long attendance in didactic courses.[42] Every effort should be made to emphasize the close relationships of preclinical and clinical instruction, and the interdependence of all branches of medical science. In other words, the instruction in any medical school should represent a compromise between the practical methods which can be carried out in general practice without elaborate equipment, the more modern procedures which require a hospital, and an "open mind" toward new discoveries.[43]

Most medical schools require three years of college work for admission, including adequate preparation in English, mathematics, physics, biology and chemistry. There are only two main reasons for entrance requirements: (1) To provide the student with adequate preparation, both scientific and "cultural," in order to enable him to profit best from his medical instruction, and (2) to provide the medical schools with students of adequate intelligence, and to keep out those who are intellectually weak and likely to fail.[44] Since the majority of medical graduates are 27 years of age by the time they have had four years of college preparation before medical school and one year of hospital training afterward, and since at least two years of hospital experience are desirable for an adequate medical training, it would seem preferable to sacrifice the senior year in college for an additional year in hospital.[45]

The premedical student should be aware of the importance of a well rounded general education as a preparation for the study of medicine and not limit himself to scientific courses. He would be better advised to secure a knowledge of the principles and a thorough appreciation of the interrelations of the basic sciences than to accumulate credits in many courses. He should learn how to work independently, observe critically, and to analyze, rather than simply store the information presented. His choice of studies, beyond those required for admission, should be governed by his own chief interests and by the intellectual stimulus to be derived from the work. His major interest may be in any field, scientific or otherwise, and should provide an opportunity for the demonstration of his real ability. In general, he should avoid courses in subjects which are included in the medical curriculum. A literary background will be of inestimable aid to his career.[46]

The selection of students is based on the quality rather than the quantity of preparation and on demonstrated evidence of personal attributes of intelligence, character and general fitness for the study and practice of medicine. As there is no infallible method of determining the ideal student and physician,[36] many sources of information must be consulted, including (1) his curricular and extracurricular college record, (2) carefully prepared, confidential appraisals by teachers who know him personally, (3) his percentile rating on the medical aptitude test, and (4) the results of an interview with members of an admission committee or one of its regional representatives.[37] The selection of students is one of the most important functions of a medical school. If the student is keen, he will be a satisfactory physician almost regardless of his teaching; if he is mediocre, no amount of instruction will materially raise his level.

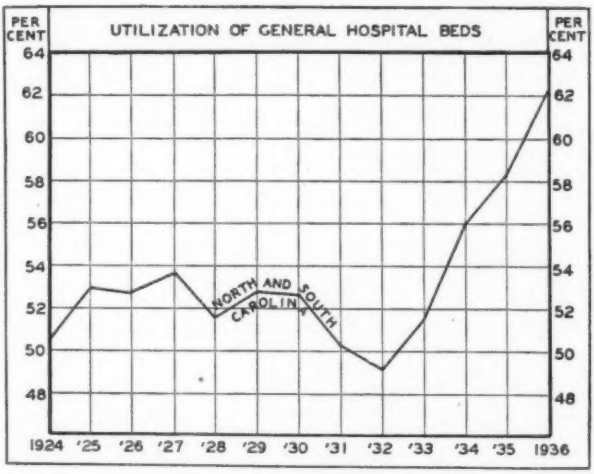
During the past century, the medical schools fought each other for students, doctrines and faculty. At present, there is no competition for students; "doctrines" and cults have disappeared, and the faculties have only the friendliest of rivalries in regard to research. Two examples of opportunities for cooperation which are at present neglected are the exchange of faculty and students. Every school is benefited if its teachers can spend a few months at another institution. Students should be encouraged to broaden their viewpoint by temporary migration to other schools in this country and abroad. This is especially true for the keen students, but the "lame ducks" also would be benefited. A poor student, of course, should be dropped from medicine, but many who have difficulty in one school make satisfactory records in another environment. Sometimes students judged by one faculty as being unworthy, survive the indictment, and demonstrate by their careers as physicians that they deserved their second chance.

The four quarter system at Tennessee, Chicago and Duke has many advantages. The present standards of physicians can be maintained and possibly improved if preference in admission is given to carefully selected younger students who have intelligence and character plus three years of college work, and if the M.D. degree is given after the completion of three medical school years of forty-four weeks each.[38] This "accelerated" schedule has been adopted by most medical schools as a war measure.

E.—It has been suggested that: Teaching hospitals add to their house staffs one or two postgraduates at a time, for a period of one or two weeks, to serve a postgraduate internship, so that they might get a good idea of what is being done in the various branches of medicine; such men to pay their own expenses and if there is no room to board them in the hospital, then they can stay in town. Such a plan for brief postgraduate internships would keep fifty or one hundred men a year up to date and would be worth more to them than all the lectures in the world.[18] However, during the past ten years in which these postgraduate internships have been offered at Duke Hospital, only six physicians have spent one week each there.

F.—One of the major objectives of the Hospital Section of The Duke Endowment is to bring about a better distribution of well trained physicians by an improvement and an extension of available facilities for the practice of modern medicine which exist in and not apart from hospitals.[21 22 39] Since the establishment of the Duke Endowment, in 1924, the percentage bed

FIGURE 1.—PERCENTAGE BED OCCUPANCY IN GENERAL HOSPITALS IN NORTH AND SOUTH CAROLINA



occupancy of the general hospitals in North and South Carolina has risen from 51 to 63 (Fig. 1), and the number of general hospitals has increased from 140 to 163 (Table 1). In 1924, the average size for all general hospitals in the Carolinas was 44 beds; twelve years later it was 58 beds. During this period the Duke Endowment has contributed $7,743,843 to 149 hospitals in North and South Carolina at the rate of $1 per day per charity patient day. It also aided 68 hospitals with $2,766,187 for buildings and equipment. A number of other factors also have influenced this strong

upward trend in the use of hospitals, such as increased income from patients, hospital care and insurance plans, a slackening of additional construction during recent years coupled with a comparatively rapid increase in population, a growing appreciation on the part of both physician and patient of the importance of the hospital in the treatment of serious illness or injury, increased contributions from tax funds and other sources for the care of charity patients, and the gain in the average size of hospitals.[40]

Only one-half of the patients who need hospitalization are able to pay for their hospital care. Serious illness for the remainder results in medical charity or financial tragedy. In the unanticipated loss of financial support which death brings to a family, and the unanticipated loss of a man's

TABLE 1.—GROWTH OF GENERAL HOSPITALS

Year	Number of Hospitals in U.S.A.[34]	Number of Hospitals in North and South Carolina[13]
1873	149	1
1899	2,000	25
1909	4,359	70
1914	5,057	97
1919	5,550	117
1923	6,830	112
1924	6,705	140
1927	6,807	149
1929	6,665	157
1936	6,770	163

business by fire, advantage is taken of the insurance principle, which anticipates and apportions such losses over long periods of time and over large groups of the people. Total burdens that crush individuals are borne easily when divided. Group hospital care is a similar insurance plan by which large numbers of individuals make regular fixed payments into a common fund to be used for the purchase of hospital services when needed by the subscriber. Self-supporting citizens thus can budget their expenses, and the hospital bills are paid in full by the fund.

The Hospital Care Association was organized on a non-profit basis in Durham, North Carolina, in 1933, with a personal loan of $250 as capital, to provide a convenient and "painless" method of paying hospital bills, and thus to reduce part of the charity load carried by the hospitals of North Carolina. Each of the members pays from 35 cents to $1 per month, depending on the type of service desired, and in return the Association annually provides from 21 to 35 days of hospital care. Credits for hospitalization were provided by the participating hospitals until the premium income of the Association made it self-supporting. In 1935, a similar organization, The Hospital Saving Association, also was started in North Carolina, and likewise is growing rapidly. The church, community, civic clubs, medical profession or others interested in human welfare can start one of these hospital care association groups.[41]

NOTE: Limited space forbids publication of the references cited in this paper. They will be included in the reprints which may be gotten from Dr. Davison on request.

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Markle Tropical Medicine Fellows

Thirty members of the faculties of as many medical schools received the privilege of attending the special tropical medicine course given at the Army Medical School, Washington, D. C., and thirty others were sent on a similar assignment to take the course at the Tulane University of Louisiana, New Orleans, making a total of sixty.

The details of selection and assignment were carried out by the Committee on the Teaching of Tropical Medicine of the Association of American Medical Colleges, consisting of Drs. Henry E. Meleney, New York University, chairman; Hiram W. Kostmayer, Tulane University of Louisiana and Malcolm J. Soule, University of Michigan.

The cost of this innovation was borne by the John and Mary R. Markle Foundation.

The motivation for this work was to provide instructors who will be able to give a satisfactory course in tropical medicine to undergraduate medical students so that when they enter military service, they will be prepared to diagnose and treat tropical diseases as they occur in the armed forces wherever they may be stationed and in returning troops that may be infected. The courses at the Army Medical School and Tulane University are each of two months duration and, being intensive, will cover much ground.

The following medical schools were represented by fellows in both courses: Cornell; Tennessee; Columbia; Bowman Gray; Albany; Michigan; Tufts (one Tufts fellow was recalled from Tulane to enter military service); Yale; Georgia; Duke; Woman's; College of Medical Evangelists; Emory; Virginia; Syracuse.

The following schools were represented at the Army Medical School only: Chicago; Baylor; Ohio; Creighton; Colorado; Boston; Rochester; Indiana; Alberta; California; Louisiana; Kansas; Meharry; Georgetown; Southern California. The following schools were represented at the Tulane course only: Cincinnati; Illinois; George Washington; Nebraska; Northwestern; Oregon; Utah; Buffalo; Western Ontario; Hahnemann; Saskatchewan; Louisville; New York Medical College; Alberta.

The Markle Foundation has made another grant of $10,000 to the Association of American Medical Colleges to arrange for another, smaller, group of individuals to take a course in tropical medicine to prepare them better to teach undergraduate medical students. When these students graduate and enter the government medical services they will be ready to cope with the problems arising from infection with tropical diseases both in the field, among troops, and at home during as well as after the war.

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Army Specialized Training Program

An itemized statement of the proposed Army specialized training program for premedical, predental and preveterinary students has been brought to the attention of the medical colleges. It brings information as to the courses which these students will pursue. Of course, this applies only to those students who are in the enlisted reserve corps and who are, therefore, under the jurisdiction of the army. In other words, they are soldiers who have received a special assignment

in a selected college. All other students, such as women and physically disqualified males and those deferred by Selective Service regulations, are not affected by this program.

This program calls for five (5) terms of 12 weeks each, a total of 60 weeks. Each day is divided into definite periods: 4 hours of lecture or demonstration; 4 hours of laboratory work or study period; 1 hour of military instruction and 1 hour of physical training. This makes a 10 hour day, except on Saturday, when the day's work ends in midafternoon. The total number of hours in the five terms is 132, or 111 term hours, or 81 semester hours, according to the figures furnished by the program makers.

Specifically, by subjects, the program calls for: mathematics, 11 hours; physics, 14 hours; chemistry, 36 hours; biology, 21 hours; history, English, geography, 20 hours; selected courses, 30 hours. These total hours have been translated into semester hours, respectively: Mathematics, 8; physics, 8; chemistry, 18; biology, 10; history, English, geography, 15; selected, 22. The time for chemistry is divided equally between inorganic and organic chemistry. The time allotted to biology (not botany) is scheduled in the third and fourth terms; embryology or comparative anatomy, 4 hours, are scheduled in the fifth term. English is contained in the prescribed course and equals 6 to 8 hours.

The prescription made for the selected courses, 22 hours, is as follows: to be selected by institution based on trainees' special interest and aptitude, and on the unusual facilities of the institution for the following: Advanced study of a modern foreign language, psychology, economics, physics and mathematics, history, public administration and physical chemistry.

This setup provides for intensive training, with a certain amount of basic training for all groups, and a branching off at that point to make possible special study in those courses which are regarded as necessary for adequate preparation in any of the fields for which this program has been prepared. Whether the program will provide that necessary preparation, time will tell, especially since it must be carried on at terrific speed without any letup except on Sunday. It will test the fortitude, mental and physical, of these students to the utmost.

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Deaths

Within the past two months, four men who have been active in the work of the Association have met with sudden death. Dr. Edgar Allen, professor of anatomy at Yale Medical School, died early in January. He had been professor of anatomy and dean of the University of Missouri School of Medicine for many years and was a regular attendant at the annual meetings of the Association.

Dr. Leslie Bigelow, acting dean at Ohio State University College of Medicine since the dean, Dr. Hardy Kemp entered military service, died from a pulmonary embolus following an operation.

Dr. F. H. Swett, professor of anatomy, Duke University School of Medicine, and a member of one of the Association committees, a regular attendant at meetings and frequent contributor to the JOURNAL, died suddenly in February.

Dr. Edward H. Risley, dean, College of Medical Evangelists and professor of biochemistry for many years also met with a sudden death from cerebral hemorrhage.

The toll among the regulars at association meetings is becoming greater year by year. We miss these old friends and mourn their passing. R. I. P.

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Army Proposed Specialized Training Program

On January 28, 1943, the following memorandum on the Army proposed specialized training program was sent to the deans of all member colleges of the Association of American Medical Colleges by the chairman of the Executive Council. At a meeting of the Executive Council, held February 14th, this mem-

orandum was approved and likewise the action of the chairman in sending it out to the colleges. Here is the memorandum:

Memorandum on the Proposed Army Specialized Training Program. — The suggestion that the college preparation for medical studies under the proposed Army Specialized Training Program be reduced to less than four semesters of accelerated instruction should be judged by the effect that such a condensation will have upon the quality of medical officers who will be produced under such a proposal. At present 98.6 per cent of medical students have had at least three years of college preparation and about 76 per cent of them hold baccalaureate degrees. Each year the medical schools decline admission to several thousands of applicants with similar academic preparation. In only rare exceptions, therefore, students in order to obtain admission to a medical school must have at least three and usually four years of college preparation. Even on this basis a considerable number of students have difficulty in mastering the medical subjects.

The responsibilities of a competent medical officer are not those of a mere technician. He must possess character, personality, judgment, emotional stability, initiative and resourcefulness in addition to a grasp of the principles of the underlying sciences upon which present day medical instruction is built. Students selected for medical studies should be mature and intellectually self-reliant. Modern medical education everywhere in the world is based upon previous completion of a reasonable amount of higher education and requires a wide diversity of talents, skills and knowledge.

Teachers of the basic medical sciences in the medical schools agree that the usual minimum premedical science requirements are not an adequate preparation for their courses. Unless students are well prepared in the work of the two first years of the medical course the clinical instruction must be conducted at a level much lower than that required for the understanding of present day medical science and practice. The inescapable result of the proposed condensation of the college preparation can only be a marked reduction in the quality of clinical training.

The medical course has already been accelerated through the reduction in the length of the internship in many hospitals and by providing the four years of acceptable medical instruction in three calendar years. The performance of students is showing some deterioration, partly because of the intensive schedule over a long period which is producing fatigue and staleness among the students and staffs, and partly because of the considerable loss of effective instructors to the armed services. The proposal to admit premedical students with about one-half of the customary preparation, if carried out, can only lead to a serious lowering of professional education and the consequent production of medical officers of inferior quality, which will be reflected in unsatisfactory medical services in the military forces and future civilian practice.

At its meeting on October 27, 1942, the Association of American Medical Colleges recommended that as a contribution to the war effort the admission requirements of its members be reduced to two academic years of college preparation but it was "the judgment of the Association that students cannot be prepared adequately to meet the modern requirements of medical education with less than this minimum preparation."

If medical schools were to admit immature students with inadequate preliminary education and then endeavor to maintain present standards of medical instruction there would be a high rate of failures in the medical course, particularly during the first two years. This would represent a large loss of man hours and of government financial outlay in the students. The alternative would be to admit an abnormal number of students to provide for an abnormal number of failures, which also would be very expensive in time, money and the efforts of medical faculties. On the other hand, the results of admitting students

ready to study medicine would appear to be an economy of time and money. The difference in the time required and expense involved to give a proper number of reasonably well qualified premedical students an adequate minimum preparation and the period of college instruction suggested in the Army plan is insignificant in view of the total manpower situation. Under whatever plan is followed the medical schools will maintain full production of medical officers.

Attention should be called to the fact that the proposed premedical training evidently does not meet the present requirements of most states for admission to the examinations for licensure to practice medicine.

There are in the colleges and universities at present enough premedical students (over 20,000) to fill to capacity the first year classes of medical schools for 1943 and 1944 (about 8,500 per calendar year) who have already had or shortly will complete the minimum two full years of premedical work. It is urged that the Government retain the most promising of these men for medical schools rather than induct those who are not able to get into a medical school at once and then recruit next year's classes from less well prepared material. If the excess number is inducted now into service, an irreplaceable supply of potential medical officers of good quality will be sacrificed. On the other hand, retention of the best of this small body of students would insure better medical officers in the near future with no loss of time and less government expenditure because a considerable part of their premedical education has already been completed.

The proposed Army plan is a return to the standards of professional education of approximately forty years ago in the face of developments in the medical sciences during recent years that require the highest degree of knowledge, skill and judgment. Such a step, if taken, would certainly appear to be against the best interests of our military forces and to be unnecessary. A maximum production of medical officers with the competence and qualifications which the Army requires can be achieved by the accelerated program of medical instruction already in force in this country, provided that the students admitted to the medical schools have a minimum of two academic years of college preparation necessary for such professional training which can satisfactorily be completed in a period of not less than six periods of twelve weeks each (about eighteen months).

* *

Statement of Opinion Anent Premedical Education

February 16, 1943, an informal conference was held in Chicago of representatives of medical colleges in membership in the Association of American Medical Colleges and the Executive Council of the Association. Dr. Willard C. Rappleye, chairman of the Executive Council, presided.

The problems confronting medical schools because of war activities were discussed. Dr. Rappleye related the results of his numerous conferences with authorities in Washington, Selective Service, Army, Navy and others.

Immediately following the conclusion of this conference, the Executive Council met. At this meeting it was

RESOLVED, That the following statement of opinion and judgment of the Executive Council relative to the premedical requirements of the Army Specialized Training Program be forwarded to the President of the United States, the Secretary of War, the Chairman of the War Manpower Commission and the officers of the Army Specialized Training Division:

The Executive Council of the Association of American Medical Colleges at its meeting in Chicago today (February 16), following an informal conference of the deans of most of the medical schools, reaffirms its opinion that the proposed program of the Army Specialized Training Division as it affects the college preparation of medical students would result in a lowering of the quality of medical care for the armed forces and the civilian population of the future. At

present over 98 per cent of medical students have had at least three years of college preparation and a large majority have had four years. Modern medical training is based on this amount of previous education.

The Army proposes that immature college students be required to complete their basic college preparation in an over-condensed curriculum of fifteen months, preliminary to the long arduous and exacting discipline of three calendar years of accelerated medical instruction. Such a standard of premedical training does not meet the requirements for medical licensure in many states. Lowering the premedical period of preparation will not, of course, increase the number of medical graduates per year because the professional schools are already operating at capacity production and full acceleration.

The Association of American Medical Colleges is of the opinion that the return to the standards of premedical education of approximately forty years ago is not only against the best interest of the medical services of the Army but that such a step is not necessary at this time. Sufficient numbers of students can be given a reasonable preparation to continue the production of competent physicians as a vital contribution to the war effort. The Association believes that the college period of preparation of recognized quality can be reduced from the present average of nearly 36 months of actual instruction to not less than 18 months of intensive and accelerated teaching. This minimum is regarded as the critical low limit of such preparation. Many believe that it is, in fact, too low.

If the Army insists, however, upon going below that minimum, the medical schools of the country will cooperate completely with the Army and will continue to train as many medical officers and doctors as rapidly as possible and at the full capacity of the medical schools. Educational authorities of the country would regret such a decision by the Army because there appears to be no compelling reason or necessity for such a step at the present time.

College News

Columbia University College of Physicians and Surgeons

The Josiah Macy, Jr., Foundation has made a gift of $150,000 to the Columbia-Presbyterian Medical Center to support a five year program of research and teaching in tropical medicine. A regular department of tropical medicine will be set up in the DeLamar Institute of Public Health, a division of the Medical School. There will be cooperation between the Medical Center and the New York City Health Department.

Existing laboratory and clinical facilities will be used and the staff of the bacteriological and parasitological laboratories and the various clinical departments will join in the work. The School of Tropical Medicine at the University of Puerto Rico, maintained and operated by Columbia, will be used as a field station. Its work will be coordinated with the program in New York. After completing their training in New York City, medical personnel will receive additional training at Puerto Rico and other points throughout the world.

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Vanderbilt University School of Medicine

Promotions: Dr. John B. Youmans, from acting professor to professor of medicine; Dr. Frank H. Luton, from associate professor to professor of psychiatry; Dr. John C. Burch, from associate professor to professor of obstetrics and gynecology; Dr. G. Sydney McClellan from assistant professor to associate professor of obstetrics and gynecology; Dr. G. John Buddingh, from assistant professor to associate professor of bacteriology; Dr. James R. Dawson, Jr., from assistant professor to associate professor of pathology; Dr. William W. Frye, from assistant professor to associate professor of preventive medicine and public health; Dr. Walter R. Spofford, from instructor to assistant professor of anatomy; Dr. Edna S. Pennington, from instructor to assistant professor of clinical medicine; Dr. Clarence S. Thomas, from instructor to assistant professor of clinical medicine.

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George Washington University School of Medicine

A Smith-Reed-Russell series lecture was delivered February 3rd by Colonel Richard P. Strong, Emeritus Professor of Tropical Medicine, Harvard Medical School, and now director of tropical and military medicine, Army Medical Center. The title of his lecture was "Tropical Diseases and the War."

The Smith-Reed-Russell Society is composed of honor students in the Medical School and honorary members elected to the Society for outstanding achievement.

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Wayne University College of Medicine

A special intensive course in clinical psychiatry has been initiated by Milton H. Erickson, M.D., Assistant Professor of Psychiatry, for the seniors of Wayne University College of Medicine who hold reserve commissions. The plan requires these students, one or two at a time, to spend at least an entire day at the United States Army Recruiting and Induction Station at Detroit. There, under the tutelage of qualified psychiatrists interested in teaching, they sit in on the regular psychiatric examinations of selectees and recruits. Under this arrangement the students have an opportunity to observe the actual clinical practice of psychiatry and to see a wealth of psychiatric and neurological problems ranging from mild degrees of maladjustment and borderline neuroses to serious personality disorders, frank psychoses, and recognizable neurological disease. Opportunity is given the students to observe directly and immediately the

contrast between those selectees readily passed by the psychiatrists and those rejected as unsuitable for military service.

Wayne has received a grant of $3,500 from the Doughnut Corporation of America to conduct investigations for the purpose of increasing the nutritive value of doughnuts. The research will be directed jointly by Dr. Gladys Everson, assistant professor of home economics, and Dr. Arthur H. Smith, professor of physiological chemistry in the medical school.

A gift of $1,500 was received from the Aaron Mendelson Memorial Trust to further research on the anatomy of the ear. The Jennie Grogan Mendelson Memorial Trust granted $2,400 for research in ophthalmology.

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University of Texas
School of Medicine

Grants of more than $12,000 were recently approved by the board of regents. They include $3,600 from the Research Laboratories of the National Canners Association for riboflavin and pantothenic acid assays to be done under the supervision of Roger J. Williams, Ph.D., director of the institute of biochemistry at the university and discoverer of pantothenic acid; $1,000 from the Williams-Waterman Fund of the Research Corporation of New York, to be devoted to combating dietary diseases, the money to be used by Hugh C. Blodgett, Ph.D., associate professor of psychology, for a study of the effect of thiamine on learning behavior, and $2,500 from Sharp and Dohme, Inc., for research work in the department of surgery by Dr. Edgar J. Poth, associate professor of surgery.

At the semicentennial graduation exercises held December 18th, a portrait of the late Dr. Meyer Bodansky was presented to the school by the Alumni Association. Doctor Bodansky was born in Elizabethgrad, Russia, in 1896, and received his Ph.D. degree from Cornell in 1923, and his M.D. degree from the University of Chicago in 1935. He had been associated with the University of Texas Medical School since 1919, serving as professor of pathological chemistry since 1930. In 1923-1933 has was visiting professor at the American University of Beirut. He was director of the Laboratories of the John Sealy Hospital until 1941—the time of his death.

Included among the recent changes in faculty are the appointments of Charles B. Allen, Ph.D., as assistant professor of anesthesiology and Dr. Edward J. Lefeber as assistant professor of internal medicine. Dr. George M. Decherd, Jr., has been named associate professor and clinical biochemist at the John Sealy Hospital.

Dr. Raymond Gregory has relinquished his professorship of pharmacology in order to accept appointment as professor of medicine and director of the Outpatient Clinic and Continuation Courses. Doctor Gregory received his medical training at the University of Minnesota Medical School. Recently, Doctor Gregory has made a special study of continuation course organization, and outpatient clinic management at the University of Minnesota, the University of Wisconsin, and the University of Iowa.

Chauncey D. Leake, Ph.D., dean, formerly professor of pharmacology at the University of California Medical School, San Francisco, will temporarily assist in teaching pharmacology with Doctor Gregory and other members of the staff.

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Louisiana State University
School of Medicine

Because of the accelerated program which is in effect at the School of Medicine of Louisiana State University, the 1942-1943 session will come to a close March 6, 1943, three months earlier than the usual June closing. The present school year began on June 25, 1942. The Commencement Exercises will be held at the Municipal Auditorium. This will mark the second time the medical graduation will be held in New Orleans under the accelerated program. Before the latter went into effect, the medical

school seniors were graduated on the Baton Rouge campus at the regular University Commencement Exercises. Franklyn Bliss Snyder, Ph.D., Litt.D., LL.D., L.H.D., President of Northwestern University of Chicago will be the Commencement Speaker.

Registration for the next academic year will take place March 11, 12, and 13. Classes will begin Monday, March 15, and the year will end on December 17, 1943. Under the accelerated program a class will graduate every nine months. The enrollment this year is 344, which is about the same as the enrollment for the past two years. Unlike the enrollment of most other schools and colleges in the university, the medical school enrollment has not been affected by the war.

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University of Toronto
Faculty of Medicine

Medals, scholarships and prizes awarded: The Cody Gold Medal, C. G. Stewart; The Cody Silver Medal, J. P. G. Maroosis, and Miss W. G. Allison; The William John Hendry Memorial Scholarship in Obstetrics and Gynaecology, W. S. Sedgwick; The Chappell Prize in Clinical Surgery, L. H. Douglas; The O.M.A. Prize in Preventive Medicine, W. S. Sedgwick; The David Dunlap Memorial Scholarships, Sixth Year, D. B. McKee; Fifth Year, Miss M. J. Forgie; The R. S. Saddington Medal in Pathology, G. W. Smith; The B'nai B'rith Scholarship, H. Kalant.

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University of Virginia
Department of Medicine

Dr. Alfred Chanutin, professor of biochemistry, has received a research grant of $3,000 from the Nutrition Foundation for continuation of his investigation of fat metabolism in the nephritic rat.

The Exchange Club of Charlottesville has made a gift of $1000, part of the proceeds from the first Apple Festival, to the William James Rucker Convalescent Home for Children.

Dr. Eugene M. Landis, professor and head of the department of medicine, has resigned, effective July 1, to become George Higginson Professor of Pathology in the Harvard Medical School.

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Emory University
School of Medicine

Dr. James J. Clark, associate professor of clinical surgery (Roentgenology), was elected to a four-year term as a member of the Board of Directors of the Radiological Society of North America at its recent meeting in Chicago.

Dr. D. C. Elkin, Whitehead Professor of Surgery, is on leave of absence to serve as Lieutenant Colonel in the Army and Chief of Surgical Staff at the Ashford General Hospital, White Sulphur Springs, West Virginia. Dr. Frank K. Boland, Sr., is acting chairman of the department of surgery during Colonel Elkin's absence.

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Boston University
School of Medicine

Boston University students will serve as interns, kitchen workers and nurses' aides in Boston hospitals on a part time basis while attending college during the new year to help relieve the serious shortage of help in local institutions through a "hospital emergency service" sponsored by the University Student Defense Board. Students will register with the board indicating the hours they can spare each day for hospital work and will be assigned to institutions in Boston through the Boston Red Cross headquarters.

Dr. Francis G. Blake, dean and Sterling professor of medicine, Yale University School of Medicine, delivered the first annual Alexander Begg Society Lecture January 28, on "Epidemic Diseases in Wartime." The Begg Society was founded about a year ago by a group of third and fourth year students to promote good scholarship and fellowship.

The recent lecture is the first in a lectureship which the society plans to sponsor annually. The Begg Society was established in honor of the late Dr. Alexander S. Begg, who at the time of his death was dean of the school of medicine.

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University of Alberta
Faculty of Medicine

Dr. John Ross Vant has been appointed professor of obstetrics and gynecology succeeding the late Dr. Leighton C. Conn. Dr. Jermym O. Baker is associate professor.

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University of Utah
School of Medicine

Dr. Adelbert L. Dippel, associate professor of obstetrics and gynecology at the University of Minnesota Medical School, has been named professor and head of the department of obstetrics and gynecology. Dr. Dippel graduated at the University of Texas Medical Branch, Galveston, in 1928; for a time he served on the staff of Johns Hopkins University School of Medicine, Baltimore, and has been a member of the faculty at Minnesota since 1940.

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Washington University
School of Medicine

A portrait of Dr. Nathaniel Allison, dean of the medical school, 1920-1923, was given to the school by his sister, Mrs. Frances Allison Krebs.

New appointments: Dr. Carlyle F. Jacobsen, as assistant dean, retaining his appointment as professor of medical psychology; Dr. Arda Green, as assistant professor of biological chemistry, retaining her position as research associate in pharmacology; Dr. Edwin Gildea as professor of psychiatry. (At Doctor Rioch's request, Doctor Gildea will also serve as administrative head of the department of neuropsychiatry. Doctor Rioch will, however, remain a member of the executive faculty.)

University of Oklahoma
School of Medicine

Appointments: Dr. Alton Clair Kurtz, formerly instructor in the department of biochemistry, University of Pennsylvania, was appointed assistant professor in the department of biochemistry. Dr. Samuel A. Corson, formerly instructor in the department of physiology of the University of Texas, was appointed assistant professor of physiology. Dr. Ollie Boyd Houchin, formerly in the division of physiological chemistry at Yale University, was appointed an instructor in the department of pharmacology.

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University of Maryland
School of Medicine

The faculty has agreed to reduce the period of premedical study for admission to two academic or scholastic years, or their equivalent, consisting of not less than sixty semester hours, provided the minimum number of semester hours of instruction in the prescribed basic subjects for a premedical education is included, exclusive of physical education and military science, in an approved college of arts and sciences. This is in conformity with the recommendations of the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association. The reductions in admission requirements are to continue in force until further notice. The decision was made following the adoption of resolutions recommending the action by the Association of American Medical Colleges and the Council on Medical Education and Hospitals of the American Medical Association.

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Ohio State University
College of Medicine

Dr. Leslie Bigelow, acting dean since Dean Kemp left to enter military service, died January 15th as the result of an embolism occurring after an operation. Dr. R. C. Baker, professor of anatomy, has been appointed acting dean.

Dr. R. A. Knouff, professor of anatomy, will take over Dr. Baker's duties as chairman of that department. Dr. Hardy A. Kemp, dean, on leave of absence, is now with the Army in Africa. He has been promoted to Lieutenant-Colonel, Medical Corps.

The establishment of a department of physical medicine, with quarters on the first floor of University Hospital, has been announced. Dr. David E. Jones, clinical assistant in orthopedic surgery, University of Louisville School of Medicine, Louisville, Ky., has been placed in charge of the new department.

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Cornell University
Medical College

Dr. Eugene L. Opie, director of the department of pathology, delivered the second Edwin R. Kretschmer Memorial Lecture of the Institute of Medicine of Chicago February 26. His subject was "The Experimental Production of Leukemia and Its Significance in Relation to Human Disease."

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Stanford University
School of Medicine

Dr. Donald B. Tresidder has been elected president of Stanford University. He succeeds Dr. Ray Lyman Wilbur, who in 1941 reached the retirement age and was appointed chancellor, and who since then has been serving as acting president. The appointment will be effective September 1. Dr. Tresidder was born in Tipton, Ind., April 7, 1894. He graduated from Stanford University in 1919 and the school of medicine in 1927. He was elected to the board of trustees in December 1939 and became president of the board in May, 1942. His father, mother and uncle all were practicing physicians. Dr. Tresidder is now president of the Yosemite Park and Curry Company, a position he has held since 1925. He has resigned as president of the board of trustees of Stanford to accept the university presidency. Dr. Wilbur, when Dr. Tresidder assumes the presidency, will carry on as chancellor, to which position he was elected for life.

The Hewlett Club of Stanford University School of Medicine recently established the "Eric Liljencrantz Memorial Collection on Aviation Medicine" in the Lane Medical Library in honor of the first member of the faculty to lose his life in the present war. Dr. Liljencrantz, a commander in the medical corps of the U. S. Naval Reserve, was killed in an airplane accident while at sea near the naval air station at Pensacola, Fla., Nov. 5, 1942. He had been granted a leave of absence at Stanford, where he was assistant professor of medicine (radiology), to carry out an assignment with the Bureau of Aeronautics in the Navy Department.

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Mayo Foundation

During the current quarter 140 medical and dental officers of the Army, Navy, Public Health Service and the Air Forces are assigned through the Surgeon Generals' offices and the various Service Commands for training under the auspices of the Mayo Foundation for Medical Education and Research. The fields in which such training is offered are anesthesiology, aviation medicine, general surgery and surgical specialties, internal medicine and medical specialties, maxillofacial surgery, neurologic surgery, physical medicine, roentgenology and thoracic surgery. Officers are assigned for periods of training varying from six to twelve weeks.

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Medical College of Virginia

The College has received a grant of $8,400 from the Office of Scientific Production and Research of the U. S. government for the continuation of research on shock, which is being done by Dr. Everett I. Evans, assistant professor of surgery. Dr. Tinsley R. Harrison, professor of medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C., delivered the Alpha Omega Alpha Lecture at the medical college, November 24 on "Car-

diac Dyspnea." The lecture is sponsored annually by the Alpha Omega Alpha fraternity.

Dr. William T. Sanger, president, has been elected president of the Richmond Chapter of the Virginia Cancer Foundation. The W. K. Kellogg Foundation has made an additional grant of $5,000 for student loans.

Dr. Philip D. Wilson, New York City, delivered the annual Stuart McGuire lectures February 25 and 26.

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Northwestern University Medical School

The Illinois Social Hygiene League turned over their assets of $250,000 to the Medical School for the establishment of the Louis E. Schmidt Public Health Foundation. The corporation and membership of the League will continue to function to promote the work of the Foundation.

Northwestern University has received $20,000,000 by the will of the late Walter Patton Murphy to develop, maintain and operate the Murphy Technological Institute which cost $6,735,000, a part ($5,000,000) being a gift made by Mr. Murphy several years before his death. The Board of Trustees of the University will make final decisions as to distribution of the money. Mr. Murphy had also given small sums of money to the liberal arts college and the school of commerce.

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University of Chicago Medical School

The University Clinics received a gift of $5,000 from Etta Carroll Baker for further investigations in tuberculosis. This is the second gift of $5,000 received from Mrs. Baker.

The Katherine Berkan Judd prize of $1,000 was awarded to Dr. Chas. B. Huggins of the department of surgery by the Board of Managers of the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City, "as a mark of recognition of pioneer work resulting in marked amelioration and prolongation of life of many patients with prostatic cancer."

Dr. Russell H. Morgan, assistant professor of roentgenology, was awarded the medal of the American Roentgen Ray Society and the medal of the Radiological Society of North America for his exhibit of the photo-electric automatic X-ray timer which he invented.

Fifteen former students, now scientists in thirteen American universities and research organizations, held a symposium in honor of Dr. Robert H. Bensley, professor-emeritus of anatomy, on November 13, 1942.

Approximately $50,000 was presented to the University by friends of the late Dr. Joseph B. DeLee to establish the Joseph B. DeLee Memorial Fund to provide fellowships in obstetrics. Eventually this fund is planned to reach $100,000.

Appointments: Dr. Samuel W. Beker, clinical professor of dermatology; Dr. Alexander Brunschwig, professor of surgery and roentgenology, as secretary of the department of surgery; Dr. Simeon T. Cantril, visiting assistant professor of roentgenology; Earl A. Evans, Jr., chairman of the department of biochemistry; Dr. Robert W. Stone, visiting professor of roentgenology.

Promotions: Eva R. Balkan, to assisitant professor of psychiatry, Otho S. A. Sprague Institute; E. S. Guzman-Barron, to associate professor of bacteriology; Dr. Robert G. Bloch, to professor of medicine; Dr. Alden K. Bloor, to associate professor of biochemistry, department of medicine; Dr. M. Edward Davis, to professor of obstetrics and gynecology; Dr. Wm. J. Dieckman, to Mary Campau Ryerson professor of obstetrics and gynecology and chairman of the department; Dr. Rosel Engel, to assistant professor of surgery (anesthesia); Dr. H. C. Hesseltine, to associate professor of obstetrics and gynecology; Dr. Francis B. Gordon, to associate professor of bacteriology; Eleanor M. Humphreys, to associate professor of pathology; Dr. Russell H. Morgan, to assistant professor of roentgenology;

Minerva Morse, assistant professor of pediatrics; Dr. Adrian H. Vander Veer, to assistant professor of psychiatry, department of medicine.

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McGill University
Faculty of Medicine

Dr. Hebbel E. Hoff, associate professor of physiology at Yale University School of Medicine, New Haven, has been appointed professor of physiology.

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Louisiana State University
School of Medicine

Paul S. Lavik, Ph.D., has been appointed full time instructor in the Department of Biochemistry. Dr. Lavik comes to the School of Medicine from the University of Wisconsin where he was a Research Assistant in Biochemistry. He received his B.A. degree from St. Olaf College, Northfield, Minnesota, in 1937; his M.S. from the University of Wisconsin in 1941; and his Ph.D. this year from the same university. His field of research was biochemistry and organic chemistry.

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Marquette University
School of Medicine

Rear Admiral Ross T. McIntire, Surgeon General of the United States Navy and personal physician to President Roosevelt, gave the Convocation Address and had conferred on him the degree of Doctor of Science (honoris causa) at the Commencement Exercises held February 13, 1943.

As a result of the accelerated program in medical education and the abolishment for the duration of the war of the requirement of the internship for the degree of Doctor of Medicine which has existed since 1918, two classes, 150 students, were graduated. There were 73 students in the class that entered the Medical School in 1938 and 77 who entered in 1939. All these graduates will serve a twelve-month internship. All students in the medical school are Reserve Officers in either the Army or the Navy.

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Medical College of Virginia

Symposium on Nutrition in War Time, March 25, 26, 27, 1943: "Nutrition Plans of the State Department of Health," Dr. I. C. Riggin, Commissioner of Health, State of Virginia; "Nutrition in a Changing World," Dr. W. H. Sebrell, National Institute of Health; "Making Nutrition Vital," Dr. Lydia J. Roberts, University of Chicago; "Victory Gardens as Related to War Time Nutrition in Virginia," Mr. L. B. Dietrick, Chairman, State Victory Gardent Committee, Virginia Polytechnic Institute; "Rationing as it Affects Nutrition of the Public," Dr. V. P. Sydenstricker, University of Georgia; "Living Under Rationing," Washington O.P.A. Representative; "War Time Nutrition in England," Dr. V. P. Sydenstricker, University of Georgia; "Teaching Nutrition Material to Elementary School Children," Dr. Lydia J. Roberts, Miss Bertlyn Bosley.

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Tufts College
Medical School

Comdr. A. Warren Stearns, M. C., U. S. Naval Reserve, on leave of absence as dean, delivered the annual Tufts Alumni Association Lecture at the medical school, February 19. His subject was "Social Equilibrium."

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University of Alabama
School of Medicine

The establishment of a four year medical school in Alabama was assured on January 27 at a meeting of Gov. Chauncey Sparks, Montgomery, with members of the state board of health and a special committee of the Medical Association of the State of Alabama appointed to promote the project. Tentative legislation has been drawn by the state medical association committee which would leave to a special commission to be ap-

pointed by the governor the matter of location, construction and equipment. The school will be known as the school of medicine of the University of Alabama and it will absorb the two year course now offered at the University of Alabama. Birmingham has been suggested as the location for the two years advanced training. Establishment of the school has been endorsed by the state medical association, the state board of health and every county medical society in the state.

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University of Cincinnati
College of Medicine

The sixth annual Roger S. Morris Memorial Lecture was delivered, January 8, by Brig. Gen. Hugh J. Morgan, chief consultant in medicine to the surgeon general of the U. S. Army, Washington, D. C. General Morgan's subject was "Reflections of an 'Irregular' Army Medical Officer."

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University of California
Medical School

Dr. Mayo H. Soley, associate professor of medicine and lecturer in pharmacology, has been appointed chairman of the division of pharmacology. Dr. Soley fills the vacancy left when Chauncey D. Leake, Ph.D., resigned to accept the deanship of the University of Texas Medical Branch at Galveston.

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State University of Iowa
College of Medicine

A six months course of intensive didactic training in physiotherapy, for women only, will be given followed by six months of practical training in an army hospital. The course began March 1 and consists of 25 weeks of 44 hours each, making a total of 1,100 hours. No tuition will be charged. It is a part of the University's contribution to the war effort. During the last six months of the course, students enter government service and are paid a salary of $1,440 per annum. The government expects these students to remain in an army hospital for at least another year as a regular physical therapy aide at a salary of $1,800 per year.

The University Hospital has received a U. S. Public Health Service grant for the development of a blood plasma reserve under the Office of Civilian Defense. The plasma is for use without charge "for treatment of casualties caused by enemy action."

New courses directly related to war problems have been added to the curriculum. Freshmen are receiving a course in advanced first aid including such topics as splinting and immobilization of fractures, resuscitation, bandaging, shock, care of burns, of gas casualties, and of penetrating wounds. For the Juniors the regular course in traumatic surgery has been expanded, with special attention to shell and shrapnel wounds, burns and shock. Emphasis is on emergency medical treatment of the wounded pending transportation to field or base hospitals. Juniors and Seniors receive a special series of 16 lectures on war medicine including such topics as: the prophylaxis and treatment of venereal diseases, the chemistry and treatment of war gases, fatigue states, physiological and medical problems of high altitudes, of dive bombing, of compression, of decompression and aeroembolism, of aviation medical examinations, and of visual adjustments under war conditions.

General News

The Crippled Child

The Crippled Child is making its annual appeal for financial support of its program. This is an activity which deserves whole-hearted support. The National Society for Crippled Children of the U.S.A., Inc., Elyria, Ohio, is the sponsor. Treatment, education, job training and employment for the handicapped are major activities. Your help is needed and will be appreciated.

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The Commonwealth Fund

For the year ending September 30, 1942, the Commonwealth Fund allocated $58,750 for research on problems of war medicine. A third of the medical research gifts of the year, the Fund estimates, went into studies with some bearing on emergency problems. "Six of these," the report states, "should contribute to the knowledge of shock, four to the control of infectious diseases, one or more to aviation medicine.

The Fund is selecting for current support chiefly projects in research which promise direct usefulness to war medicine, offer significant contributions to the physiological underpinnings of medicine, or rest on long-continued consecutive observation that cannot be interrupted without letting partly won facts slip back out of reach.

In medical education the Fund has sought to help medical schools make the most of facilities at hand. A new experiment of this sort was begun with a grant to the Long Island College of Medicine to pay the expenses of visiting instructors from other medical schools. Under this plan Dr. Thomas Addis, professor of medicine at Stanford University, spent six weeks at the College, assuming regular teaching duties and taking charge of a ward in the Long Island College Hospital. Later Dr. Wilson G. Smillie of the Cornell University Medical School brought his staff to Long Island to give two courses in parasitology.

Ten fellowships for advanced study were awarded during the year to junior instructors and other staff members of medical schools and teaching hospitals. On such a fellowship Dr. Basil C. MacLean, director of the Strong Memorial Hospital of the University of Rochester and president of the American Hospital Association, spent a year in the study of public health at the Johns Hopkins University School of Hygiene and Public Health.

At Harvard, Cornell, Minnesota, and Stanford the Fund subsidized special teaching units designed to help pediatricians understand the psychological needs of sick children. Fellowships for training in psychiatry and psychiatric social work were offered both in the United States and in Great Britain, where the Fund contributes to the expenses of the Child Guidance Council and a special training course in mental health at the London School of Economics and Political Science.

The Commonwealth Fund Fellowships for British students having been suspended for the duration of the war, fellowships for post-graduate study in the United States were offered to physicians and public health workers from Latin-American countries. Fifteen such awards were available last year and were made to candidates holding posts of strategic importance in their own countries and selected with the help of the Pan American Sanitary Bureau. Three men from Brazil, two each from the Argentine Republic, Chile, and Costa Rica, and one each from Cuba, the Dominican Republic, Guatemala, Honduras, Paraguay, and Peru are now at work on this basis in American universities, hospitals, and laboratories.

Seven books were published by the

Fund during the year. Among them was Neural Mechanisms in Poliomyelitis, by Howard A. Howe, M.D., and David Bodian, M.D., which was chosen by the Academy of Pediatrics to receive the annual Mead Johnson Award for Research in Pediatrics. Others dealt with the strategy of tuberculosis control, the techniques of school health service, methods of psychiatric education, and other subjects related to the Fund's activities.

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Cummings Foundation and Detroit Orthopaedic Clinic Merge

Announcement has been received of the recent merger of the Cummings Foundation with the Detroit Orthopaedic Clinic. The foundation was established in 1920 for "the establishment and maintenance of a home for the care, maintenance and education of crippled children." For a time it was in such condition that no assets were available. The original group of trustees was augmented in 1934 by the formation of a foundation which functioned until June, 1942. The fund is administered by a board of trustees elected annually by members of the corporation of the Detroit Orthopaedic Clinic. Estimated in 1920 at about $1,500,000, a large percentage of which was in real estate holdings, the fund has been decreased to about one third of its former value. The Detroit Orthopaedic Clinic, an outgrowth of Sigma Gamma Clinic, established in 1920, maintains an outpatient department in the city where approximately 1,000 patients are seen annually, a 50 bed hospital school in the country and a special program for the study of better methods for the care of physically handicapped children. Following the merger the name of Sigma Gamma Hospital School was changed to the George H. Cummings Memorial Hospital School, according to the terms of the will. Dr. Charles W. Peabody, Detroit, is chief of staff, Dr. Winthrop M. Phelps, Baltimore, is acting consultant for the cerebral palsy program, and sixteen surgeons and physicians serve as a consultant board for the agency. The organization offers a total program, with great emphasis on personality adjustment, through all departments. Programs which supplement orthopedic care include child guidance, nursery schools, recreation and vocational placement.

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Leslie W. Rowland

Leslie W. Rowland, head of the medical textbook division of J. B. Lippincott Company, died, January 2, 1943, after a brief illness. Interment was in Arlington National Cemetery, Washington, D. C.

Prior to his connection with J. B. Lippincott Company, Mr. Rowland, who was 51, had been promotion manager of the Cincinnati Enquirer. During the Ohio River floods in 1937, Mr. Rowland organized the newspaper trucks to supply the city with drinking water at a time when drinking water was at a premium. Early in his career, he was a reporter for the old Philadelphia Press. After two years in France during World War I, he became advertising manager for the American Express Company where he remained until 1927. He was publicity director for the first world cruise ever attempted by any travel or steamship company. He was publicity director also for the first "Army Show" which was produced by the famous 7th Regiment in New York City during early 1917.

Mr. Rowland was a regular attendant at the annual meetings of the Association of American Medical Colleges and by his winning personality made many friends among the deans of the medical schools and others whom he contacted there and at other times on his visits to medical schools.

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American Board of Ophthalmology

1943 Examinations: New York City, June 4 and 5; Chicago, October 8 and 9. Candidates will be required to appear for examination on two successive days.

Write at once for formal application blanks to Dr. John Green, Secretary, 6830 Waterman Ave., St. Louis, Mo.

Course on Medical Aspects of Chemical Warfare

Seventy-one physicians from the Sixth and Seventh Civilian Defense Regions attended an instructor's course on "Medical Aspects of Chemical Warfare," presented under the auspices of the Medical Division of the Office of Civilian Defense at Northwestern University Medical School, Chicago, January 14-16.

The course was presented primarily for representatives of 15 midwestern medical schools, who will subsequently organize courses in their own schools for the instruction of practicing physicians.

Speakers and their subjects were as follows: Dr. Granville A. Bennett, Acting Medical Gas Officer, Medical Division, Office of Civilian Defense, Washington, D. C., "Civilian Defense for Chemical Warfare;" Dr, John S. Coulter, Regional Medical Officer, Sixth Civilian Defense Region, Chicago, "Medical Participation in Gas Defense;" Mr. William H. Cary, Jr., Regional Sanitary Engineer, Sixth Civilian Defense Region, Chicago, "Gas Defense Organization;" Dr. James K. Senior, associate professor of chemistry, University of Chicago, "General Aspects of Chemical Warfare;" Dr. Ralph W. Gerard, professor of physiology, University of Chicago, School of Medicine, "Medical Aspects of Chemical Warfare;" Dr. Smith Freeman, assistant professor of physiology and pharmacology, Northwestern University Medical School, Chicago, "Phosgene, Chlorine, Chlorpicrin;" Dr. Franklin C. McLean, professor of pathological physiology, University of Chicago School of Medicine, "Vesicants (Including Systemic and Pulmonary Effects);" Dr. M. A. Lipton, instructor in physiology, University of Chicago School of Medicine, "Nitrogen Mustards;" Dr. J. O. Hutchens, instructor in physiology, University of Chicago School of Medicine, "Lewisite and Other Arsenical Vesicants;" Dr. C. C. Lushbaugh, instructor in pathology, University of Chicago School of Medicine, "demonstrations in pathology;" Lieutenant Commander Arthur F. Abt, U. S. Navy Medical Reserve, "Lacrimators, Sternutators and Screening Smokes;" Dr. C. J. Farmer, professor of chemistry, Northwestern University, Chicago, "Systemic Poisons;" Dr. William F. Hughes, Jr., department of ophthalmology, Johns Hopkins University School of Medicine, Baltimore, "Chemical Injuries of the Eyes;" Dr. Clayton G. Loosli, assistant professor of medicine, University of Chicago School of Medicine, "Aerobiology and Secondary Infections;" Dr. Lester R. Dragstedt, professor of surgery, University of Chicago School of Medicine, "Thermal Burns;" Dr. Granville A. Bennett, Acting Medical Gas Officer, Office of Civilian Defense, Washington, D. C., "Organization of Chemical Warfare Courses."

The last day of the course was devoted to practical training. In the morning at Thorne Hall, Northwestern University, Captain N. H. Fritz of the Sixth Service Command, Chicago, directed training in the fitting of gas masks; Mr. William H. Cary, Jr., Regional Sanitary Engineer, Office of Civilian Defense, demonstrated the operation of a gas cleansing station; Lieutenant Commander Abt conducted an exercise in cleansing of personnel and Dr. Bennett explained the chain of evacuation of gas casualties and methods of cleansing. Exercises in field identification of gases were conducted by Captain Fritz. In the afternoon at the Navy Pier, Lieutenant John Pabst, U. S. Navy, conducted a gas chamber exercise and Captain Fritz, a gas mask drill.

* *

Federal Student Loans

Federal funds to the extent of $5,000,000 were made available for loans to students pursuing accelerated medical courses and certain other designated technical courses. Likewise additional funds were made available to the United States Public Health Service for the training of nurses to augment the supply of nurses depleted by the demands of the military program.

American Foundation for Tropical Medicine, Inc.

The annual meeting of members of the American Foundation for Tropical Medicine, Inc., was held January 19, 1943, in New York City.

Guest speakers at the dinner were Major General James C. Magee, Surgeon General, U. S. Army, Captain Erik G. Hakansson of the Bureau of Medicine and Surgery, United States Navy, Captain Rolla E. Dyer, Director of the National Institute of Health, U. S. Public Health Service, and Mr. Clarence J. Stiker, representative of the State Department.

The membership meeting approved plans submitted by the Executive Committee to secure $100,000 in gifts to provide for expansion of activities in the current year. The Foundation, established by the American Academy of Tropical Medicine, was incorporated in New York State in 1940. It has been an agency through which individuals and business concerns with interests in tropical areas can aid in strengthening facilities in this country for study and research in tropical diseases. The activity will be along the lines originally established for the Foundation, namely:

1. Support of graduate departments in tropical medicine at American medical schools.

2. Grants for fellowships in tropical medicine.

3. Financial aid for exchange of faculty.

4. Support of technical journals in the field.

5. Support of research by grants in aid.

At the annual meeting the Executive Director's report on activities for the previous year was given by Dr. J. A. Curran, President and Dean of the Long Island College of Medicine who succeeded Lt. Col. Thomas T. Mackie of New York City as Director during 1942. Lt. Col. Mackie, Executive Officer, Division of Parasitology and Tropical Medicine, Army Medical School, Army Medical Center, was elected President of the Foundation.

Other officers elected were Dr. Willard C. Rappleye, Vice President, Mr. W. W. Lancaster, Treasurer, and Mr. Alfred R. Crawford, Secretary.

Members of the Board of Directors elected at the annual meeting were Mr. William B. Bell, Mr. Crawford, Dr. Curran, Dr. Edward C. Ernst, Dr. George Harrop, Dr. Walter A. Jamieson, Dr. Theodore G. Klumpp, Dr. H. W. Kostmayer, Mr. Lancaster, Mr. William Loeb, Lt. Col. Mackie, Dr. Henry E. Meleney, Mr. George W. Merck, Mr. Carleton Palmer, Colonel Harry Plotz, Dr. Rappleye, Dr. Alfred C. Reed, Dr. George C. Shattuck, Col. James S. Simmons and Dr. Robert G. Sproul.

An Executive Committee composed of Dr. Curran, Dr. Klumpp, Lt. Col. Mackie, Dr. Meleney, Dr. Rappleye, Mr. Lancaster and Mr. Crawford was named by the directors to serve for the current year.

The Directors also elected a Medical Committee made up of Col. Charles F. Craig, Dr. Ernest Carroll Faust, Lt. Col. Mackie, Dr. Meleney, Dr. Reed, Dr. Shattuck, and Col. Joseph F. Siler.

In addition to those already named, the following were elected to membership in the Foundation: General Hugh S. Cumming, Lt. Col. Albert R. Dreisbach, General George C. Dunham, Dr. Lester J. Evans, Dr. Edward G. Huber, Dr. Edward H. Hume, Dr. Maxwell E. Lapham and Dr. Edward I. Salisbury.

Other present members include Dr. George Bachman, Dr. Nicholas Murray Butler, Mr. W. B. DeGolia, Mr. David I. Mackie, Jr., Major General Magee, Rear Admiral Ross T. McIntire, Mr. Joseph W. Montgomery, Dr. Thomas W. Parran and Mr. Leo S. Rowe.

Book News

Fundamentals of Immunology

By William C. Boyd, Ph.D., Associate Professor of Biochemistry, Boston University School of Medicine. Interscience Publishers, Inc., New York. 1943. Price, $5.50.

This book is intended to serve as an introduction to immunology for medical students, chemists, biologists and others interested in an understanding of the basic principles of this science. The chief emphasis is on serology but methods of laboratory practice and some clinical applications are also discussed. The author is of the opinion that a firm grasp of the basic principles will make their application less difficult. A slight previous acquaintance with organic chemistry and bacteriology is presumed. One feature of the book is the almost complete abandonment of the historical method of approach. Consequently, modern opinions are presented straight off. Only the latest and most pertinent literature is cited at the end of each chapter.

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Autonomic Regulations

By Ernst Gellhorn, M.D., Ph.D., Professor of Physiology, College of Medicine, University of Illinois. Interscience Publishers, Inc., New York. 1943. Price, $5.50.

This book evolved as a result of lectures given during the past nine years and research in the physiology of the organism with special reference to the role of autonomic regulation. It stresses the organismic concept for teaching and research as well as for medical problems of psychology and neuropsychiatry. The five parts into which the book is divided deal with a general introduction; adjustment reactions involving primarily the respiratory and circulatory systems; autonomic endocrine integration; autonomic-somatic integration; results and applications.

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Outline of Psychiatric Case Study

By Paul William Preu, M.D., Assistant Professor of Psychiatry and Mental Hygiene, Yale University School of Medicine. With a foreword by Eugen Kahn, M.D., Ed. 2. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers. New York. 1943.

An outline of psychiatric case study stressing history taking and behavioral examination, as taught in the Psychiatric Clinic of the New Haven Hospital.

Religion and Health

By Seward Hiltner, Executive Secretary, Commission on Religion and Health, Federal Council of the Churches of Christ in America. The Macmillan Company, New York. 1943. Price, $2.50.

The cure of illness, both physical and mental, is discussed. There are chapters on "What Mental Hygiene Teaches the Church;" "Mental Health and Religious Education;" "Pastoral Counseling;" "Ministering to the Sick." The main purpose of the book is to survey religion's relationship to health.

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Psychomatic Medicine: The Clinical Application of Psychopathology to General Medical Problems

By Edward Weiss, M.D., Professor of Clinical Medicine, and O. Spurgeon English, M.D., Professor of Psychiatry, Temple University Medical School. W. B. Saunders Company, Philadelphia. 1943. Price, $8.

A study of the emotional factors of illness, a part of the senior curriculum in the medical school. It is well worth reading and should prove valuable to every practitioner of medicine who is often baffled to find the cause of what may appear to be an "obscure" disease whose cause must be sought in the emotions of the patient.

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Pancreatic Function and Pancreatic Disease: Studied by Means of Secretin

By Henrik O. Lagerlof, M.D. Translated by Helen D. Frey, with a Foreword by Joseph H. Pratt, M.D. The Macmillan Company, New York. 1942. Price, $3.50.

Of special interest to the gastroenterologist. Points out the value of secretin as a diagnostic agent in pancreatic dysfunction.

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Textbook of Biochemistry

By Benjamin Harrow, Ph.D., Professor of Chemistry, College of the City of New York. Ed. 3. W. B. Saunders Company, Philadelphia. 1943. Price, $4.

Tells the story of biochemistry, including the latest developments, in simple, easily understood language. Practical applications of biochemistry are stressed. One chapter is devoted to immunotherapy and chemotherapy. Many important changes have been made in this new edition.

The Anatomy of the Nervous System: From the Standpoint of Development and Function

By Stephen Walter Ranson, M.D., Ph.D., late Professor of Neurology and Director of the Neurological Institute, Northwestern University Medical School. Ed. 7. W. B. Saunders Company, Philadelphia. 1943. Price, $6.50.

Rewritten and revised by the author.

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Textbook of Clinical Neurology: With an Introduction to the History of Neurology

By Israel S. Wechsler, M.D., Clinical Professor of Neurology, Columbia University. Ed. 5. W. B. Saunders Company, Philadelphia. 1943. Price, $7.50.

Brought up to date. As good, if not better, than it ever was. A fine book for the undergraduate as well as the graduate student.

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Diseases of the Breast

By Charles F. Geschickter, M.D., Director of the Francis P. Garman Cancer Research Laboratory, with special section on treatment in collaboration with Murray M. Copeland, M.D., Instructor in Surgery, Johns Hopkins Medical School. J. B. Lippincott Company, Philadelphia. 1943. Price, $10.

A magnificent production; very complete; beautifully illustrated; based on extensive research, observation and experience by an outstanding authority on the subject.

◆ ◆

Treatment of Fractures

Guy A. Caldwell, M.D., Professor of Orthopedic Surgery, Tulane University of Louisiana School of Medicine. Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers, New York. 1943. Price, $5.

Based on many years of extensive experience in the treatment of fractures. Excellent line drawings depict procedures. They are drawn from actual cases or posed models. One or two procedures are described for each of the common type of fractures which the author's experience has shown to be useful. The treatment of compound fractures is emphasized. The use of the sulfonamides in the prevention and treatment of infections is discussed on the basis of clinical experience and animal experiments. This is an excellent text for the undergraduate medical student as well as for the practitioner.

Essentials of Gynecology

By Willard R. Cooke, M.D., Professor of Obstetrics and Gynecology, University of Texas School of Medicine. J. B. Lippincott Company, Philadelphia. 1943. Price, $6.50.

A practical book; concise; very readable; well illustrated. The author's many years of experience as a teacher are reflected in this book, therefore, it should make a good appeal to the medical student who needs a book such as this one is. It presents essentials clearly and concisely.

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Obstetrical Practice

By Alfred C. Beck, M.D., Professor of Obstetrics and Gynecology, Long Island College of Medicine. Ed. 3. The Williams & Wilkins Company, Baltimore. 1943. Price, $7.

This edition retains all the excellent features which have made previous editions popular. The author's long experience as a teacher is reflected throughout the work. There are no superfluous sections; the 1100 fine drawings illuminate the text beyond all possibility of misunderstanding. The section on operative obstetrics has been rewritten. The "when, why and how" of every operative procedure is set forth clearly. Is it possible that the weight of textbooks can be decreased? To do so would make it easier to carry them around.

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Atlas of Ovarian Tumors

By Gemma Barzilai, M.D., New York City, and Fred W. Stewart, M.D., Pathologist, Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City. Grune & Stratton, New York. 1943. Price, $10.

The text is built around a collection of micrographs and the book is primarily a diagnostic atlas. The illustrations are numerous and beautiful, made from the author's slides. This is a complete treatise on tumors of the ovary of equal value to the pathologist and the clinician. It is an outstanding contribution to the literature. It is also a real work of art; a joy and a revelation. The publishers deserve commendation for their part.

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A Surgeon's Fight to Rebuild Men (An Autobiography)

By Fred H. Albee, M.D. Foreword by Lowell Thomas. E. P. Dutton & Co., Inc., New York. 1943. Price, $3.50.

The life story of a well known orthopedic surgeon, titled by the publisher "the world's foremost ambassador in White."

Diseases of the Skin

By Oliver S. Ormsby, M.D., Rush Professor of Dermatology, University of Illinois, and Hamilton Montgomery, M.D., Associate Professor of Dermatology and Syphilology, Mayo Foundation, University of Minnesota. Ed. 6. Lea & Febiger, Philadelphia. 1943. Price, $14.

The book is clear, concise and systematic and not only covers the fundamentals of dermatology but branches out to other fields which are of interest to dermatologists. A most important feature is the introductory material, which covers the anatomy and physiology of the skin and the general considerations of symptomatology, etiology, pathology, diagnosis, prognosis and therapeutics. It is a dermatologic encyclopedia constructed on conservative lines in which differential diagnosis is particularly well covered and the therapy is based on extensive clinical experience.

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Doctors of the Mind:
The Story of Psychiatry

By Marie Reynon Ray. Little, Brown and Company, Boston. 1942. Price, $3.

The author brings into dramatic relief the battles of the pioneers of psychiatry as they worked with infinite caution in the shadowy caverns of the human mind. She deals with Mesmer and the hypnosis he developed; with Freud, who first gathered the threads of hypnosis and suggestion into the science of psychoanalysis; and with Sakel and his discovery of the insulin-shock treatment for schizophrenia. She tells of Wagner-Jauregg, who injected the deadly malaria germ into the insane in a desperate effort to burn out their afflictions; of a clinic in Rome where electricity was thrown into the bodies of schizophrenics, and of many other tense and almost terrifying experiments. Far from being a dull recapitulation of the accomplishments of these men of science, "Doctors of the Mind" is endowed with a suppleness and wit which make it as entertaining as it is authentic.

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Clinical Diagnosis
By Laboratory Methods: A Working Manual of Clinical Pathology

By James C. Todd, M.D., Late Professor of Clinical Pathology, University of Colorado School of Medicine, and Arthur H. Sanford, M.D., Professor of Clinical Pathology, Mayo Foundation, University of Minnesota. Ed. 10. W. B. Saunders Company, Philadelphia. 1943. Price, $6.

Thoroughly revised and brought up to date.

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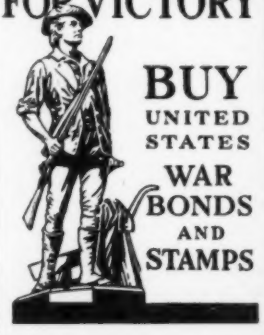

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